THE CONTRIBUTION OF BRADLEY INTERNATIONAL AIRPORT TO CONNECTICUT'S ECONOMY

State of Connecticut

Economic Impact Analysis

May 27, 2005

EXECUTIVE SUMMARY

At the request of the Bradley Board and the Commissioner of the Department of Transportation (DOT), the Department of Economic and Community Development (DECD) has conducted a study to estimate the contribution made by Bradley International Airport (Bradley) to Connecticut's economy.

Introduction

Airports are economic engines. They employ people, make capital and consumable purchases, contract for services and generate income. In other words they create economic activity. Traditional economic impact analyses of airports measure the impact airports have on an economy as "economic entities" – a self-contained or singular generator of economic activity. They generally focus on the "operational" impact of the airport in the same way one would measure the impact of any other business. Doing so is not incorrect. It is, however, incomplete.

What these traditional studies fail to do, or do inadequately, is quantify the value of airports as *transportation assets.* Specifically they do not quantify the value of the access they provide to other economies and other geographies, or the value of time savings they provide over other modes of transportation.

By focusing solely on the operational impact of an airport, the broader and more important role of the airport as *economic facilitator* is obscured or overlooked completely. It is as an economic facilitator that an airport truly impacts an economy. As an economic facilitator airports allow other "economic entities" to create more economic activity than they otherwise could create without their presence. It is the value of the access that is provided by the presence of the airport that has the greatest and most far-reaching influence on an economy. As such, it is the value of this access and the interconnectedness between an airport and an economy that must be analyzed.

This concept represents a departure from the traditional way in which the impact or contribution of an airport to an economy is measured, however the application of this approach is critical to truly understanding how an airport functions within an economy and affects economic growth. It is hoped that the insights gained from this study will expand the ways in which the Bradley is viewed in terms of its enormous economic influence and critical role in the future of the state's economy, and ultimately lead to greater maximization of its economic potential.

Purpose of Study

The purpose of this study is to illustrate the importance and interconnectedness of Bradley to Connecticut's economy and future economic development. To show the effects of the airport on the level of economic activity in the state of Connecticut, the broadly defined economic impact measures of jobs (employment), value added (gross regional product), and personal income (including wages) is used.[1]

In providing a comprehensive understanding of the effects of the airport on the state economy, the report underscores the critical links between air transportation and key industries in Connecticut. In addition, the report emphasizes how technology and an expanding global marketplace make efficient modes of travel paramount for regional competitiveness and shows the size and importance of Bradley relative to other components of the transportation infrastructure.

One of the primary goals of this project was to create a consistent measurement system that would allow for quick and cost effective updates to be made to this study on a regular basis. The development

and acquisition of the Tran/Sight Airport Model provides the DECD, with the necessary capabilities to carry out these updates as well as provide ongoing economic impact analysis services for the DOT and the Bradley Board. This study establishes a baseline from which the DECD will be able to use the modeling methodology and capabilities (established for this study) to run "What If" scenarios that will assist the DOT and the Bradley Board in their airport planning and economic development efforts.

Results

Over the next twenty years Bradley will contribute, on average, more than $34 billion in output, nearly $11 billion in income for Connecticut's residents and sustain nearly 140,000 jobs.

Table 1 - Results Summary

	RIMS II	REMI		
		Scenario 1 *Air Ops*	Scenario 2 *Tourism*	Scenario 3 *Air Contribute*
Employment	22,140	17,100	8,251	140,175
Output ($M)	$2,038	$1,772	$1,060	$34,605
Income ($M)	$618	$578	$480	$11,478

The RIMS II analysis estimates the economic impacts of Bradley at 22,140 jobs, which produces $2.0 billion in output, which helps create $618 million in income for Connecticut residents. This is directly comparable to the *Airport Operations* scenario in the REMI analysis, which estimates Bradley's impacts at 17,700 jobs, $1.8 billion in output, and $578 million in income. The next two sets of results include dynamic projections of Bradley's impact over a 20-year horizon. The *Tourism Effect* scenario shows the double-edged sword of traveler impacts, relative to the first REMI scenario, in that employment impacts decrease to 8,251, and output and income decrease to $1.1 billion and $480 million respectively. Finally, the *Airport Contribution* scenario shows the real value of Bradley as a facilitator of air travel for passenger and cargo purposes. Here the long-term contribution of the airport sustains over 140,000 jobs, more than $34 billion in output, and over $11 billion in income for residents.

These analyses show the critical role that Bradley plays in the local and regional economies as both an active employer and driver of economic impacts, but more so, as an invaluable transportation asset that propels Connecticut's people and businesses forward in an increasingly integrated and competitive international economy.

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I   OVERVIEW

1.1 Airports and the Economy

The primary role of an airport is to facilitate the movement of people and goods into, out of and through economies and geographies. In fulfilling its primary function, an airport fosters economic development and increases the quality of life in the region.

The primary economic benefit derived from an airport is accessibility. Globalization and just-in-time production are quickly elevating the importance of airports in the creation of jobs and wealth within an economy. With more and more industries relying on the rapid movement of goods over long distances, air transportation's ability to meet this need as well as reduce time and storage costs directly impacts the overall competitiveness of businesses. In addition, air travel, more than any other mode of transportation, has the potential to open up new markets to, and create more opportunities for, regional businesses. As such, the role of air transportation in local and regional economies will continue to expand as the world economy becomes more and more integrated.

An airport is not only a gateway for commerce and tourism; it is an economic engine in its own right, creating jobs and generating economic activity. The business activities of an airport generate direct economic activity and create downstream indirect and induced activity. Airports also generate tax revenue for the state.

Much as seaports were in past centuries, today's airports are increasingly entwined with the regional economies they inhabit. As such they are vital economic drivers and facilitators whose capabilities should be recognized and maximized.

1.2 Planning at Bradley International Airport

Planning is critical to any large organization. At Bradley, factors in planning policy may be weighed in light of its customers that use the airport to move goods and people, its role in the Connecticut transportation network, or its position in the national aviation system as the second largest airport in New England. In 2004 Bradley had an annual budget of almost fifty million dollars, it flew over six million passengers, and it moved over 160 thousand tons of mail and freight. As the primary supplier of air transportation services in the region, Bradley undergoes an extensive planning process to ensure that the needs of local businesses, residents, and governments are met. The two formal documents that guide this effort are the Master Plan, currently being updated by Parsons Brinckerhoff and scheduled to be complete by the summer of 2005, and the Strategic Plan developed by Leigh Fisher and Associates on behalf of Bradley. These two long-term planning guides set the general course of development at the Airport. The Airport also maintains a five-year capital improvement program with the FAA, and implements an annual capital improvement budget, which are both designed to bring the longer-term objectives to fruition.[3]

1.2.1 Master Plan

The Federal Aviation Administration (FAA) requires all commercial airports to prepare Master Plans. These Master Plans aid the FAA, as well as the individual airport, in providing resources necessary for the national aviation transportation system to meet future capacity needs. Bradley is embarking on a new updated Master Plan to be completed by Parsons Brinckerhoff Aviation. The Master Plan Update for Bradley will serve as a planning tool that will offer guidelines for development. The Master Plan is

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not a permanent or fixed document, and its recommendations are subject to refinement, so it must be flexible to allow for changes.[4]

The Master Plan is divided into the following chapters:

Goals and Objectives – to provide a plan for facility development, maintenance, and expansion in order to meet expected demand over a twenty-year horizon. This section also summarizes and outlines the components of the rest of the Master Plan document.

Inventory of Existing Conditions – throughout the Master Plan information is used from an inventory of information created from airport records, field interviews, telephone discussions and analysis of existing reports and studies that is broken down into the following sections:

- Airport History
- Airport Activity
- Airport Facilities
- Airport Access
- General Aviation
- Airline Maintenance
- Ancillary and Support Facilities
- Military Facilities

Activity Forecasts – determine the future needs for type (fleet mix) and quantity of aircraft needed to meet expected aviation demands, as well as the ability of airside and landside facilities to meet these levels of activity. Combining these two projections the Master Plan estimates the extent to which future aviation demands will not be met, and recommends development strategies in order to meet capacity.

Demand/Capacity and Facility Requirements – building on the contents of chapters 2 and 3, this section presents an analysis of Bradley's existing and future operational airfield capacity. It then defines facility requirements to accommodate future demand according to the following sections:

- Demand/Capacity Methodology and Definition
- Runway Capacity Analysis
- Airfield Facility Requirements
- Passenger Terminal Facilities
- Airport Support Facilities[5]

1.2.2 Strategic Plan
In accordance with legislation enacted by the State of Connecticut, the Strategic Plan was developed by the Bradley Board of Directors and the DOT. The Strategic Plan framework is comprised of an outline of its Mission and Vision Statement, a situational analysis of external factors, planning process, Strategic and Tactical Goals and divisional objectives and performance measures.

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<u>*Bradley's Mission Statement is*</u>:
"Bradley International Airport is dedicated to developing and supporting economic growth in Connecticut by facilitating the movement of global travel and trade; to increasing its share of passenger and cargo traffic and the number of domestic and international destinations it serves; to operating state-of-the-art facilities in a safe and efficient manner; to ensuring excellence in service and maximum convenience to all of its customers and tenants; to conducting itself as a "good neighbor" to the surrounding communities; and to operating as a financially self-sustaining entity."

The *situational analysis* covers the following factors, which are external to Bradley, but have a large influence on the success of planning:

- Economic and Political Conditions

- Aviation Security Concerns

- Financial Health of the Airline Industry

- Airline Service and Routes

- Airline Competition and Airfares

- Airline Consolidation and Alliances

- Availability and Price of Aviation Fuel

- Capacity of National Air Traffic Control System

- Capacity of the Airport

The Planning Process section summarizes a strategic and business plan that recommends updating the strategic plan for evolving circumstances, using the Strategic Plan as a basis for development of an annual Business Plan, assigning division responsibility and accountability, developing performance metrics based on divisional goals and objectives, and using the annual business plan as a basis for recruitment and staff development.

Based upon the Mission Statement, a series of strategic and tactical goals have been identified that correspond to specific elements that support the airport's mission, as well as a series of performance measures that will allow the airport to assess progress in accomplishing its mission.

The airport's *strategic and tactical goals* have been divided into the following sections:

- Customer Service

- Facilities and Access

- Economic Development

- Competitive Positioning

- Community Relations

- Governance and Organization

In keeping with the strategic and business planning process outlined above, it is important to use the overall strategic goals to establish divisional objectives that would form the basis of the overall business

strategy. From these objectives, key actions or initiatives have been identified, along with a system of measurement to track performance for the following areas:

- Board of Directors

- Finance

- Project Development, Project Management, and Engineering

- Leasing

- Air Service/Marketing

- BIA - Operations and Maintenance, and IT

- BIA - Security

Potential *performance measures* have been identified based on industry-standard measures such as cost per enplaned passenger, airline rates and charges, and macro-level financial measures. The goal of the performance measurement system is to identify successes and opportunities for improvement on a continuous basis.[6]

1.3 Economic Analysis and Policy Planning

The results of this study have numerous applications in the policy planning process at Bradley. Moreover, using the REMI Transight/Airports model for future potential scenarios will lend valuable information to the decision-making process.

1.4 Fiscal Responsibility

Bradley is operated as a financially self-sustaining enterprise fund of the state. This means that all of the operating, maintenance and capital costs of the airport are funded by user charges and by federal grants available under the FAA's Airport Improvement Program for certain eligible projects. The following goals and responsibilities support the financially self-sustaining nature of the airport operation:

- Annually establish an airport operating, maintenance and capital improvement budget consistent with applicable airline agreements that produces debt service coverage levels in compliance with the Airport Revenue Bond Trust Indenture.

- Annually establish a Parking Facilities operating, maintenance and capital improvement budget consistent with the parking facility lease agreement that produces debt service coverage levels in compliance with the Parking Revenue Bond Trust Indenture.

- Establish airline and non-airline rates and charges at competitive levels to foster additional air service and development at the Airport.

- Establish and enforce appropriate internal control procedures that will:

- Safeguard resources against loss due to waste, abuse, mismanagement, errors and fraud;

- Ensure compliance with applicable laws, regulations, contracts and management directives;

- Produce reliable, accurate and timely financial and management reports so that performance and profitability are assessed correctly; and

- Ensure operations are conducted effectively and efficiently consistent with the organization's mission.

- Continuously monitor and report on airport financial performance to ensure that budget objectives and limitations are achieved and adhered to.

- Produce annual audited financial statements consistent with all applicable government and regulatory requirements.

- Manage airport funds and cash flows consistent with Airport Revenue Bond and Special Obligation Parking Revenue Bond Trust Indenture requirements.

- Conduct strategic financial planning; management and implementation to ensure long-term major capital development requirements are met.

- Provide for all-day to accounting and financial management activities such as billing and accounts receivable, purchasing and accounts payable, financial reporting and capital project management[7]

1.5 Meeting Future Demand

The Bradley Master Plan outlines expected demand levels and the required facility developments required to meet capacity. While the forecasts used by Parson Brinkhoff Aviation were developed independently from this study, there is opportunity to use data in the REMI/Airports analysis in order to refine estimates for requirements to meet future demand. Specifically:

Air Side
Included in the REMI/Airports analysis are forecasts for future passenger traffic at the airport. This forecast is developed through structural linkages to macroeconomic variables that exist in the REMI baseline forecast and combined with current and historical passenger flow data at Bradley. By using a more dynamic and responsive passenger forecast, Master Plan requirements for runway, airfield, and air support facilities could be recalibrated.

Terminal Side
In addition to using passenger traffic, the REMI/Airports model also contains data on passenger spending on concessions, transportation, and hotels. This information could be used to predict future demand for these services, and allow Bradley to coordinate the economic development components of its strategic plan.

Road Side
The REMI/Airports model is actually only a component of a larger transportation model of the state of Connecticut. Working with transportation demand modelers from the DOT, the DECD has made early steps towards modeling the effects of changes to the state's transportation infrastructure. In regard to the airport, by using similar methods in conjunction with travel demand data and expected throughput at the airport, projections can be made to forecast the transportation needs in sections of the I-91 corridor, route 20, and other roadways near the airport.

1.6 Economic Development

The primary focus of this study is to analyze the economic impacts of Bradley in the context of maximizing potential economic development opportunities. The study results show the changes to GSP, jobs, income, and state revenues (not airport revenues) caused by the aviation services rendered by Bradley. This satisfies the Strategic Plan initiatives to both quantify economic impacts of Bradley

and track job creation on and off the airport. The model results contain cargo level changes over time, as well as the number of leisure travelers, which also support tactical initiatives of the Strategic Plan.

This report identifies the function Bradley performs in Connecticut's economy not only as an economic generator but also as an economic facilitator. It highlights Bradley's extensive influence in maintaining, influencing and stimulating economic growth and underscores the critical role Bradley's development plays in the state's economic development strategy and future economic growth.

One of the primary goals of this project was to create a consistent measurement system that would allow for quick and cost effective updates to be made to this study on a regular basis. The development and acquisition of the Tran/Sight Airport Model provides the DECD, with the necessary capabilities to carry out these updates as well as provide ongoing economic impact analysis services for the DOT and the Bradley Board. This study establishes a baseline from which the DECD will be able to use the modeling methodology and capabilities (established for this study) to run "What If" scenarios that will assist the DOT and the Bradley Board in their airport planning and economic development efforts. Using data from the analysis, DECD and the Bradley Board can take steps to build forward-looking development plans. This will aid in exploring potential economic development opportunities, as well as find best-use policies for land that isn't suitable for aviation use. Finally, by bringing together facility requirement expectations with passenger demand forecasts and inventive land use planning, Bradley policies can be put in place to meet the future economic demands of the state of Connecticut and the I-91 corridor.

II AIRPORT CHARACTERISTICS

2.1 Air Transportation Activity

2.1.1 Passenger and Cargo Services

Air transportation services at Bradley relate to either passenger or cargo activities. It is by facilitating the movement of people and goods that Bradley acts as a driver for the state economy and a key part of the transportation infrastructure.

Commercial Passenger – Commercial passenger service at Bradley is beginning to recover from the effects of 9/11 and the recession that followed. The airport is New England's second largest airport, the 51st busiest in the U.S., and averages approximately 350 daily flights to 62 destinations.   In 2004 Bradley had a total passenger throughput of 6,737,048 (a 7.6% increase from 2003) on nine major airlines (American/Trans States, American West, Continental, Delta/Delta Song, Skyway Airlines, Northwest & Pinnacle, Southwest, United, US Airways). Bradley is primarily (approximately 97%) an origin and destination airport.

Air Cargo – Cargo is also expanding its existing footprint of service at Bradley. In 2004 Bradley was the 39th busiest airport in the U.S. in terms of cargo activity, moving 154,825 tons of freight (8.8% increase over 2003). Bradley also handles 11,188 tons of mail (5.6% increase over 2003) that is carried predominantly by the belly freight of regularly scheduled airlines. In addition to the major airlines contribution, freight and mail at Bradley is carried by 10 cargo airlines (Air Net, Airborne, BAX, DHL, MENLO, Federal Express, Kalitta Charters, Tradewinds, UPS & Air NOW, and Wiggins). [8]

2.1.2 Fixed Base Operators and Maintenance Facilities

Fixed Base Operators (FBOs) include providers of airframe or power plant repair, fueling, line service, aircraft sales and/or rental, flight instruction, avionics, aircraft storage, air taxi and charter. At Bradley FBOs and Bombardier's Global Express Maintenance Facility employ people who conduct services that are integral to the functioning of the airport.

2.2 Relationship to Local Economy

In addition to the crucial role that Bradley plays as a facilitator of air transportation services for passenger and cargo purposes, there are other very important links between Bradley and the local economy. Firms that provide services at Bradley require a large amount of materials and services that are provided largely by manufacturing, retail, and business services firms in Hartford County. These include gas for ground transportation firms (shuttles, limo, taxi), food and supplies for hotels, transportation equipment for airlines, storage for freighters, and personnel for all of the above.

The second consequence of the airport activity is the spending of income earned by those who are either directly or indirectly working to provide air transportation services. Wages earned by these workers flow back into the economy as spending on consumption goods such as food, retail items, gas, clothing, housing, and other durables. The facilitation of passenger and cargo air transportation services has far reaching effects on all sectors of the state economy.

2.3 Bradley's Market Region

Geography and Capture Region of Bradley Airport
Located at the center of the *New Atlantic Triangle*[9], which has at its vertices Albany, Boston, and New York, Bradley plays a critical role in providing air transportation to the I-91 corridor's residents and businesses. Recent surveys show that 89% of enplaned passengers at Bradley are from an area defined by the State of Connecticut minus Fairfield County plus the two Massachusetts counties of Hamden and Hampshire. Further, 44% of enplaned passengers originate from Hartford County alone. The area outlined shows the airport catchment area extending south and east within a 60-minute drive range, extending east to the RI border and the midpoint between Bradley and Logan, and extending north within a 120-minute drive range.[10]

Graphic 1 - The Bradley International Airport Market Region
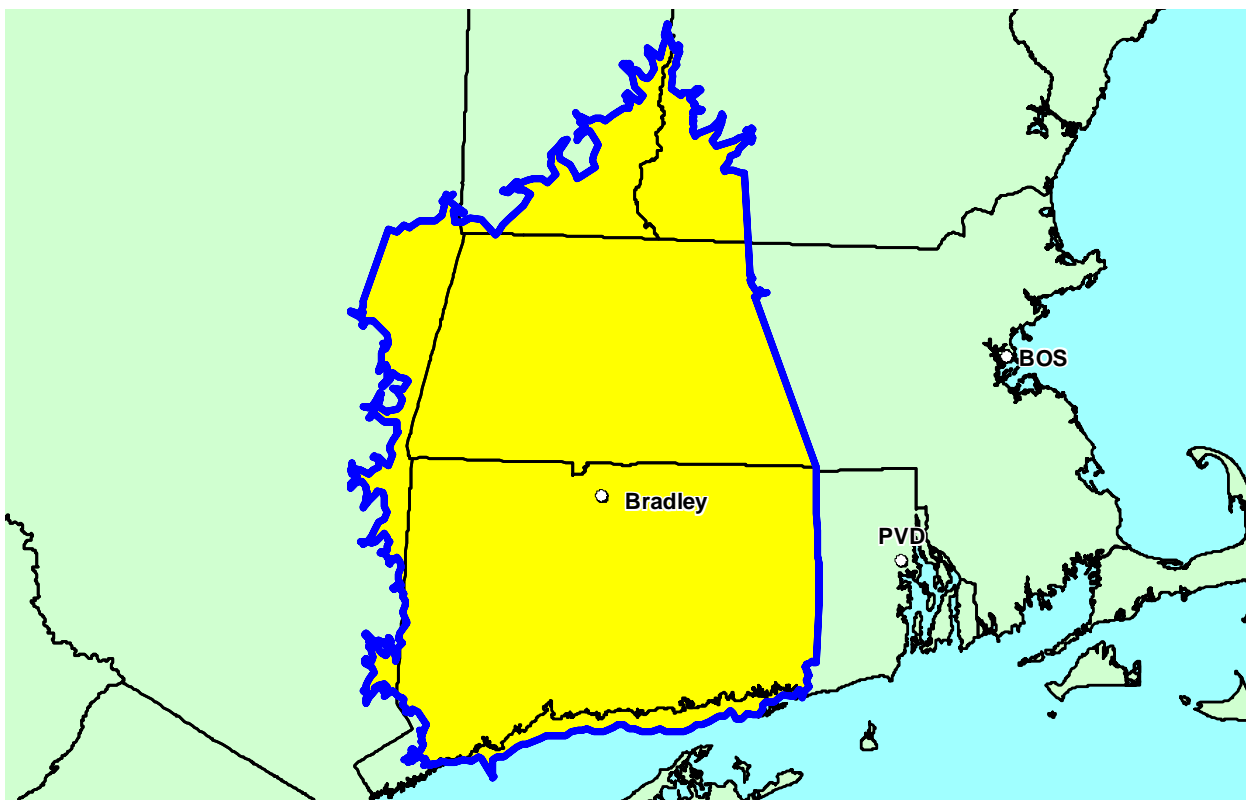
2.4 Peer and Competitive Airports

In order to standardize performance measures in accordance with its strategic plan, Bradley evaluates benchmark metrics against comparable airports. These airports are peer and competitive airports. The first group, *peer airports*, is defined as medium-hub airports (1,600,000-4,000,000 annual enplanements). The second group of airports, *competitive airports,* includes those airports, which are geographically close, and may draw passengers from Bradley's air service region.

Bradley International Airports "Peer" and "Competitor" Airports

Peer Airports	Competitive Airports

Peer Airports
- Albuquerque International
- Austin-Bergstrom International
- Albany International Airport
- Buffalo Niagara International
- Long Island MacArthur Airport
- Manchester Airport
- Will Rogers World Airport
- Port Columbus International
- Sacramento International Airport
- T.F. Green State Airport
- Tucson International Airport
- Tulsa International Airport

Competitive Airports
- Manchester Airport
- Albany International Airport
- Boston Logan International Airport
- John F. Kennedy International Airport
- Newark International Airport
- LaGuardia International Airport
- Stewart Airport
- T. F. Green (Providence) International Airport
- Westchester County Airport

The locations of competitor airports relative to Bradley are presented in Graphic 1 below. The location of Bradley is represented by the red airplane.[6]

Graphic 2 - The Location of Bradley International Airport's Competitor airports

2.5 Transportation Access

2.5.1 Role in I-91 Corridor
Bradley acts as a key anchor to the I-91 corridor connecting New Haven through Hartford up to Springfield and the rest of the Pioneer Valley. As a starting point for freight and cargo, Bradley enables the flow of goods to other key transportation hubs such as the rail system in Hartford, and the rail and port facilities in New Haven. For business passengers Bradley provides for most of Connecticut and Western Massachusetts a low-cost alternative to airports in Albany, Boston, and New York. In conjunction with the Transportation Strategy Board's proposed improvements to I-84 and I-95 Bradley is also in the unique position to take advantage of capacity constraints at airports in those cities.

The key sectors in the metro Hartford and rest of Connecticut (insurance, business services, transportation equipment manufacturing, and health services) rely on Bradley either for importing key materials, or reaching crucial national or international markets, or both. Especially if Connecticut's economy is going to recover from the 2001 recession (and to a certain degree the recession from the early 1990's), Bradley will have to provide regional high tech firms with access to international markets either through direct flights, or connections to nearby hubs in New York and Boston. In the future, tapping major markets in Asia and Europe will prove to be a lucrative key to the region's success.

2.5.2 Capacity

Air-side Capacity
Many factors influence the capacity of an airport, such as the configuration of the airfield, the operating environment, availability and sophistication of aids to navigation, air traffic control facilities and procedures, and aircraft operational demand and fleet mix.

The airfield layout at Bradley has three runways:

- Runway 6/24 is 9,502 feet long by 200 feet wide

- Runway 15/33 is 6,847 feet long by 150 feet wide

- Runway 1/19 is 5,141 feet long by 100 feet wide

Runway 6/24 and Runway 15/33 are served by full-length parallel taxiways. Runway 6/24 is used during all weather conditions because of its length and instrumentation and is considered the airport's primary runway. Runway 15/33 is the crosswind runway while Runway 1/19 is recognized as a general aviation (GA) runway.

The number of gates that support airplane operations is currently twenty-three, with sixteen allocated for major air carriers, six allocated for commuter airlines, and one gate for standby.

Terminal-side Capacity
Air carrier terminal facilities at the airport consist of two principle buildings. The original Murphy Terminal (now referred to as Terminal B) was completed in 1949 and currently operates using 10 gates. Within Terminal B, Concourse B is used primarily for overnight parking of air carrier aircraft. The second building, Terminal A, was constructed in 1985 and includes the 11-gate Concourse. In 2003, Terminal A was expanded eastward to include a new 12-gate concourse referred to as the East Concourse.

Terminal A consists of nearly 250,000 square feet (SF) on a total of three levels. The basement houses mechanical equipment and building maintenance rooms used for everyday airport functions. The ground or first floor is comprised of the baggage handling, rental car and hotel courtesy stations, and individual airline operations spaces under the concourse. The second floor contains the ticket counters, lobby, concessions, the US Air Club, TSA and departure lounges. A mezzanine area above the ticket counter houses the Connecticut DOT Bureau of Aviation and Ports offices (CONNDOT owns and operates the airport). Two concourses exist within Terminal A, the 11-gate Concourse C and the 12-gate East Concourse (constructed in 2003).

Terminal B (the Murphy Terminal and former International Arrival Building) contain approximately 224,600 SF on a total of four levels. Previously, the top two floors were used by the air traffic control tower (ATCT) for FAA control functions. After the construction of a new ATCT located at the north intersection of the runways, the top floors were vacated and currently used for storage. The basic terminal utilization is similar to Terminal A with mechanical equipment and concession storage in the basement; baggage handling and airline/airport operations on the ground level; and ticketing and concessions on the second level.

The 10-gate (west) Concourse A has second level departures lounges, while the 8-gate (east) Concourse B is limited to one level. Concourse B has only departure lounges on the ground floor. Due to its age, Terminal B has many deficiencies. The alternatives analysis will explore possible uses for Terminal B. The third related terminal facility at the airport is the new award-winning Federal Inspection Station (FIS), which opened in December 2002. The FIS consists of approximately 28,000 SF located near Terminal B. The FIS can process over 300 passengers per hour for aircraft as large as B-747. Services such as the U.S. Department of Health and Human Services, U.S. Immigration and Naturalization Service, U.S. Customs Service and the U.S. Department of Agricultural provide support for international flights arriving at the airport.

Road-side Capacity
Vehicular parking requirements can be divided into two categories, short-term parking less than 8-10 hours, and long-term parking of more than 8-10 hours. Within the short-term parking segment, 50 percent to 60 percent of the cars typically park less than two hours. Usually, short-term parking requires 30 percent of the total parking areas, which serve approximately 75 percent of all users. Long-term remote parking lots typically make up 75 percent of the total parking area for only 25 percent of the users. Public parking at the airport consists of a recently constructed multi-level parking garage located adjacent to Terminal A that consists of approximately 5,000 public parking spaces. A total of 758 short-term and 1,932 long-term parking spaces create an overall total of 2,690 spaces at grade level. In addition to the 7,690 on-airport public parking spaces, 12 private off-airport parking lots containing an estimated 10,000 parking spaces provide valet parking services using shuttle buses to the terminal. Utilizing the standard ratio of one public parking space per 400 annual enplaned passengers, a requirement of approximately 15,410 spaces will be needed by the year 2022. Assuming that 30 percent of the spaces will be for short-term parking, approximately 4,623 spaces will be needed for short-term parking while an additional 10,787 spaces will be needed for long-term parking by 2022. For the design year 2022, it is anticipated the airport will have to construct another parking garage similar to that of the existing 5,000 space parking garage near Terminal A.[5]

III. CURRENT ECONOMIC ENVIRONMENT

The last few years have been difficult for the airline industry. The September 11, 2001 attack on the World Trade Center crippled an already struggling sector of the economy by sharply decreasing the nation's appetite for air travel. The ensuing recession compounded the problem by stifling any possibility of a quick air travel rebound. Today the industry must contend with rising oil prices and an influx of low-cost airlines entering the market. This new set of constraints has made it even more difficult to do business in what has traditionally been one of the world's most competitive industries.

What follows is an overview of the economic conditions present at the time of the writing of this report and a brief discussion about the airline industry and issues affecting that industry's performance.

3.1 General Economic Outlook

3.1.1 Global Outlook

With China and India leading the way, the global marketplace for air travel continues to steadily expand. Boeing's 2004-2023 market outlook estimates that world GDP will "grow by 3% over the next 20 years." [11] The consensus among economists and business analysts is that the global economy will experience overall strong growth in 2005 with China leading the way at nearly 10% growth in GDP. Currently the only real threats to continued expansion are sustained high energy prices and any unexpected sharp increases in the price of producer inputs (commodities). Other potential threats include the U.S. deficit and growing trade imbalance with China as well as the undervalued Chinese Yuan. China's seemingly insatiable demand for raw materials will continue to put upward pressure on producer prices and it appears that energy costs will remain high for sometime to come as the problem seems to be more one of refinery capacity than political uncertainty.

As the world's economies adjust to the rapidly developing global marketplace, we can expect growing pains to persist. Continued productivity gains in mature economies will lead to slow or stagnant job growth, while the increasing rate of technology transfer will cause erratic employment growth and loss cycles in developing economies.

For the airlines, explosive growth in China and the rest of Asia bodes well for international carriers and carriers with domestic Chinese routes. Increased global trade also bodes well for cargo carriers. Carriers with a high concentration of domestic routes in mature markets such as the U.S. will suffer the most from continued high-energy prices.

3.1.2 National Outlook

It is anticipated that the U.S. economy will grow at an average rate of approximately 3% for the foreseeable future. Boeing estimates that North American GDP will grow at an annual rate of 2.9% for the 20-year period.[12]

U.S.-China relations are sure to become a major issue in 2005 as the trade imbalance between the two countries has dramatically risen over the past few years to almost $150 billion annually. This too will put a drag on economic growth in 2005 and beyond.

The expectation however, is that China will raise the value of its currency, which should in time provide modest increases to U.S. retail exporters, and reduce the amount of imports from China. This should

mitigate an increasing trade deficit, and, combined with acceptable levels of inflation, increase real income and spur domestic spending.

The Federal Reserve will likely continue to raise interest rates in increments of 25 basis points at each Federal Open Market Committee meeting, hopefully holding inflation at bay until neutral rates are achieved.

As the war in Iraq persists, the cost will continue to rise, putting further strain on the federal budget and severely limiting any future economic stimulus options, should the economic recovery slow. The continuing stand-off between the U.S. and North Korea, as well as the emerging Iranian nuclear threat, will perpetuate uncertainty in the marketplace. Over the long run such uncertainty weakens consumer confidence.

Sustained high-energy costs, the federal deficit and slow job growth will continue to plague the nation in 2005.

3.1.3 Connecticut Outlook

The DECD is a member of New England Economic Partnership (NEEP), a member-supported, non-profit organization dedicated to providing objective economic analyses and forecasts.

Connecticut's economy is expected to have a mild yet sustained recovery in 2005. After reaching a four-year low for employment (1,638,100) in July of 2004, the NEEP forecast[13] expects the state to add 21,000 jobs in 2005. Increases are anticipated in the service and government sectors, with manufacturing continuing to lose jobs at a slowing pace. Gross State Product (GSP) is estimated to grow by 4.1% this year. These higher than expected gains may be motivated by national trends, and have prompted a more conservative forecast of 3.6% growth for 2005. After turning the corner in 2003, real personal income growth is expected to reach 1.1% this year and continue throughout 2005. Housing starts are expected to remain strong however will dampen slightly during the remainder of 2005.

Employment
Consistent with trends from past recessions, Connecticut's has been more severe (-3.57% employment) and lasted longer (7/00-7/04) than the U.S. as a whole. NEEP predicts that Connecticut will add 21,000 jobs in 2005 bringing non-agricultural employment to 1,665,000, with a slowing pace bringing 2008 employment to 1,718,000. These are largely dependent on continued growth at the national level, and avoiding key risks to local businesses.

This year's job creation occurred mostly in the Government (3,100) – which includes Connecticut's two Native American owned and operated casinos -, Finance (400), Professional and Business Services (400) and Construction (200) sectors. It should be noted that growth in low value-added service and government sectors calls into question the quality of the jobs being created in Connecticut. Future sources of job growth are expected from Education and Health Services, reflecting the state (and nation's) aging population, and Leisure and Hospitality Services, reflecting the continuing trend of rising income in the state. Manufacturing, which lost 11,700 jobs in 2003 is expected to continue that trend, albeit at a slower pace, going forward.

Gross State Product
Shrinking employment hasn't negatively impacted GSP, which is expected to have grown 4.1% (up to 167.1 billion) in 2004. Gross State Product will grow to 173.1 billion in 2005, and then slow to a 3.0% growth rate, reaching 193.6 billion in 2008. These levels of growth combined with increasing wages highlight the state's labor productivity. In an increasingly competitive environment, productivity remains the Connecticut economy's key advantage, something that should be cautiously watched as the state becomes more dependent on service and government sectors for job growth.

Labor Market
All ten of the labor market regions in the state reported both decreasing employment and unemployment rates. Instead of being a mixed signal, this shows the shrinking participation rate in Connecticut, whose labor force has shrunk by 22,800 since 1st quarter 2003. This trend is expected to change in 2005 as increased employment opportunity and higher wages will lure people back to the work force, increasing the labor force to 1,809,000. The labor force is expected to grow approximately .5% annually to 1,854,000 in 2008.

Housing Market
In spite of a mixed economic environment, the housing market continued its strong trend in 2004, most likely boosted by a favorable borrowing environment. Housing permits increased by more than 10% up to 11,500. In response to Federal Reserve policies, mortgage rates should increase in 2005, eating away at demand and restraining, but not stopping, growth in housing prices.

In addition to increased borrowing costs, the housing market will continue to be impacted by increasing construction costs. A hot housing market, combined with China's seemingly insatiable demand for raw materials, have sent the cost of construction soaring – with steel, lumber and cement leading the way. The industry, which saw modest cost, increases of approximately 2.6% annually just a year ago (McGraw-Hill Construction - enr.com Fourth Quarter Cost Report – 12/20/04) is now faced with an increase of 8.7% through last October (enr.com Fourth Quarter Cost Report – 12/20/04). Looking ahead, most analysts believe that as supply catches up with demand the inflation of building material of the costs will subside to a more manageable 3.5% per year by the end of 2005, however the price gains of the past year will likely remain mostly intact. Longer-term, as the economies of the developing world gain strength (especially China, India and most of South America) demand for building materials will be heavy, keeping upward pressure on prices and subjecting the market to increased price volatility.

Rising interest rates and construction costs should begin to dampen the U.S. and Connecticut housing markets; however Connecticut's housing market should continue show strong results. Rising energy prices will also have a significant impact on both the construction and occupancy side of the housing market. Higher prices at the pump with increase the cost of transporting materials and raise the cost of operating heavy machinery. Higher heating and electricity costs will place an increased burden on homeowners' and renters' ability to cover housing costs. Both factors portend higher unit costs, which will make the provision of affordable housing more difficult while at the same time heightening its urgency.

3.2 Airline Industry Outlook

The following is a brief review of the airline industry, as it existed at the time of the writing of this report.

3.2.1 Demand

Boeing's most recent 20-year forecast (2004-2023) estimates that worldwide passenger traffic growth will average 5.2% per year and air cargo traffic growth will average 6.2% per year.[14] Airbus' Global Market Forecast for the same period estimates that passenger traffic growth will average 5.3% per year and air cargo traffic growth will average 5.9% per year.[15]

Both forecasts anticipate the bulk of passenger and freight growth to occur in Asia, followed by South America and Europe. Boeing's forecast states that "because of its maturity the intra-North America market share of world traffic will decline from 24% to 20% as less developed markets grow faster."[16]

Boeing estimates that "air travel growth for North American carriers will average 4.5% annually through 2023"[17] while Airbus estimates that domestic U.S. passenger traffic will increase by 3.2% over the same period.[18] Airbus estimates that domestic U.S. cargo will increase by 4.2% per year.[19]

3.2.2 Competition

Due to high costs and competitive pressures, most analysts expect the airline industry to continue to perform weakly in 2005. Traditional network carriers will continue to struggle with high cost and/or inefficient structures and high debt. Their troubles will only be made worse by high energy costs. Though some have realized short-term relief through labor concessions and bankruptcy protection, their ability to profitably compete in the long-term remains a question. Newer low-cost carriers will continue to squeeze the "legacy" carriers on domestic flight fares.

The primary concern for all airlines is the current and future cost of fuel, one of the biggest cost drivers for the industry. With the recent unexpected spike in oil prices and all energy forecasts pointing to sustained high prices for the immediate and possibly mid-term period, any gains that airlines may have made through structural changes or through labor concessions are quickly evaporating. The extremely competitive pricing in the industry has left little room for the absorption of the recent increases in fuel costs.

3.2.3 Legacy Carriers vs. Low-Cost Carriers

The market is currently divided between legacy carriers and low-cost carriers. Of the two, only the low-cost carriers seem to be able to make a profit. On the surface it would appear that the primary reason for this is that legacy carriers are burdened with expensive union contracts while low-cost carriers have lower wage structures. While this is true in many instances it is not universal. A deeper look at the industry reveals that other factors such as labor productivity and efficient asset utilization have a greater impact on cost structures and profitability. David Eil of Global Insight states in his report entitled Legacy Airlines Could Learn from Low-Cost Competitors, "Low-cost carriers use their resources, both human and material, much more efficiently than legacy airlines, which are locked into old modes of production." In terms of human capital utilization, legacy carriers with older union contracts suffer from restrictive work rules that lower productivity by idling bodies. Low-cost carriers have been able to negotiate contracts that allow for "more flexible work rules" that allow for "greater cross-utilization of labor, resulting in much improved productivity." With regard to capital asset utilization, legacy carriers rely heavily on hub-and-spoke systems, which idle aircraft (and personnel) more than the point-to-point systems employed by low-cost carriers. "In 2002 JetBlue operated each of its aircraft for an average of 12.9 hours per day, while legacy carriers" struggled "to reach 10 hours per day."

The productivity drags of restrictive labor contracts and the inefficiencies in asset utilization of the hub-and-spoke system combine to form a structural problem that threatens the long-term viability of legacy carriers. The current effort to secure wage concessions out of their work forces will do little improve the long-term competitive position of these airlines. Legacy carriers may not be able to move away from hub-and-spoke system because of the "huge fixed costs in real estate at their hubs that keep them wedded to this system."[20]

IV. MODELS AND METHODS

4.1 Overview

Building on existing knowledge about Bradley, and past analyses of the airport, DECD has developed a process that uses the most sophisticated econometric tools available to the state. This process is repeatable, innovative, and is consistent with the Federal Aviation Administration's manual *Estimating the Regional Economic Significance of Airports, September 1992*. Another goal in this effort is to provide a bridge to previous analyses and comparable studies. This process involves the parallel use of both the RIMS II multipliers and REMI's TranSight/Airports model.

Developing a method for modeling the impacts of Bradley required, first, a critical review of existing methods of analysis. From hundreds of papers, reports and articles on airport studies and various methods to employ, DECD has summarized below the most recent studies regarding Bradley, as well as the papers that had the most influence on developing the department's methods. This is followed by limitations of existing practices used in evaluating economic impacts of airports and components of airport analysis that the department sought to improve upon. Building from this background, the specifics of the department's modeling approach, including the description of the new TranSight/Airports model, are outlined in this analysis.

4.2 Airport Studies

4.2.1 Connecticut Studies

In the last five years four major economic studies have been done for Bradley. They provide context, background, and methods for developing our approach and a nuance to local conditions that is absent from studies of other airports.

Connecticut Strategic Economic Framework. Prepared by Michael Gallis Associates and the Connecticut Regional Institute for the 21st Century, 1999.

Michael Gallis Associates were hired to develop a transportation strategy to guide the State of Connecticut for the next 20 years. This study created a strategic framework to link together the multi-modal transportation, land use, and economic development efforts of the State. Specific to Bradley, the study recommended increased connectivity to other modes of transportation, marketing strategies focused on service to Europe, and financing details for individual projects.

Bradley International Airport, 'At the Crossroads'. Prepared by Schiphol Project Consult B.V., 1999.

DECD and DOT selected Schiphol to identify opportunities and provide consulting to ensure that the most advanced concepts in customer service, financing, operations, management, and facility design are used at Bradley. Schiphol finds that Bradley's competitiveness can be improved by treating the airport not just as a transportation facility, but as a business focused on return on investment. The study follows with suggestions on marketing, quality assurance, and oversight.

Bradley International Airport, Economic Impacts. Prepared by Wilbur Smith Associates 2000.

Bradley commissioned WSA to ascertain the economic impacts generated by the airport. This study focuses on direct and indirect impacts of the airport using the RIMS II multipliers. The analysis is

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carried out according to FAA guidelines for economic impact analysis, and it makes use of both business and passenger surveys.

Bradley International Airport Improvements: An Economic Impact Analysis. Prepared by Connecticut Center for Economic Analysis, 2001.

DECD and DOT requested CCEA to conduct an economic impact study. This study is similar to the WSA study in that it focuses primarily on the direct and indirect effects of airport operations. However, this project uses the REMI Policy Insight model instead of RIMS II. Additionally, this study focuses not on the impacts of the airport in general, but instead on a specific project, the effects of the new terminal constructed at Bradley.

4.2.2 Relevant non-Bradley Studies

Our literature review of airport studies showed the diversity of approaches to estimating and reporting economic impacts. The following examples were crucial in the development of our own methods.

Estimating The Regional Economic Significance of Airports. Volpe National Transportation Systems Center & Federal Aviation Administration, 1992.

As a follow up to their 1986 report, this document outlines the FAA's procedure for estimating the economic impacts of airports. The document is developed for airport managers and planners who would handle the analysis without the assistance of a consultant in order to reduce associated costs. Methods for estimating transportation benefits (particularly time savings), economic impacts, and even amenities are discussed. This covers both the technical and logistical requirements for this type of analysis and includes instructions for surveys and what types of models to use.

Economic Impacts of Los Angeles International Airport and the LAX Master Plan Alternatives on the Los Angeles Regional Economy. Hamilton, Rabinovitz & Alschuler, Inc., 2001.

In this report HR&A address a number of alternative scenarios for the LAX Master Plan. Included are a complete description of the airport and its connection to the Los Angeles economy, a more rigorous discussion of existing airport analysis methods, and a system for assessing the impacts and contributions of airports that improves upon weaknesses in the FAA recommendations.

The Direct Impact of an Airport on Traveler's Expenditures: Methodology and Application. Joseph S. DeSalvo, University of South Florida, 2002.

This academic paper focuses on the premise, common to traditional impact studies, that "assumed that the demand for travel into the local area by visitors is perfectly elastic with respect to the time and money costs of travel, while the demand for travel by local residents is perfectly inelastic with respect to these variables". DeSalvo outlines his methods for correcting these flawed assumptions, and uses Tampa International Airport as a case study to show the stark differences in results when the new approach is employed.[21-25]

4.3 Shortcomings of Existing Approaches

4.3.1 FAA & RIMS II

The methods recommended by the FAA promote a strong focus on operations at the airport and spending by airport tenants and visitors. However, further study can highlight the transportation benefits provided by airports in terms of passenger and cargo services in the context of the local economic transportation network. "By failing to articulate the linkages between passenger and cargo activity levels and the consequent economic impacts, the true role that airports play as regional infrastructure in regional economic growth is obscured. As a consequence, many analyses have mistakenly concluded that airports "cause" economic growth, when in fact airports facilitate economic growth, which is largely driven by macro-economic conditions and comparative regional advantages."[24]

The main tool of analysis recommended by the FAA, the RIMS II multipliers, have limitations in their ability to capture more complex economic factors. "RIMS II is based on an accounting framework called an Input-Output (I-O) table. For each industry, an I-O table shows the distribution of the inputs purchased and the outputs sold. A typical I-O table in RIMS II is derived mainly from two data sources: BEA's national I-O table, which shows the input and output structure of nearly 500 U.S. industries, and BEA's regional economic accounts, which are used to adjust the national I-O table in order to reflect a region's industrial structure and trading patterns."[26] However, these multipliers fail to take into account demographic effects, such as shortages or surpluses in labor markets or the effects of in/out migration. Multipliers based strictly on I-O tables also ignore the endogenous effects of changes to productivity and price and the ability to substitute between capital and labor as the efficiency of these components varies.

Finally, the FAA approach, by using the RIMS II multipliers only offers a static look at the economic impacts of airports. In the context of capacity expansion, or the relationship of an airport's absence to the long-term viability of a regional economy, this approach is indifferent to the effects the airport has on regional competitiveness through lower transportation costs. Since these effects are usually compounded over time, by looking at a 'snap shot' of the airport's impact the analysis misses the future benefits of continued or expanding airport operation, or the future costs of reduced airport activity and constraints.

4.3.2 REMI Policy Insight

A number of recent airport studies have used the REMI Policy Insight model as their analysis tool. The most advanced of these is the approach adopted in the LAX study (summarized above). The study goes to great effort to enhance the framework from which economic impacts of airports are derived. Due to the more complex modeling structure and dynamic features of the Policy Insight model and creativity on the part of HR&A, the LAX study does much to ameliorate the shortcomings of the FAA recommendations.

While the LAX report discusses the relationship between air transportation services and regional macro-economic conditions, it is unable to quantitatively capture the effects of these services on regional competitiveness. This is very possibly due to the limitations of earlier versions of Policy Insight, which, while possessing strong economic linkages, had no concepts connecting time savings or accessibility to comparative advantages experienced by local firms and residents.

4.4 Models

4.4.1 Dual Model Approach

The foremost objective of this study is to accurately estimate the economic impacts of the airport in a way that is useful in directing future airport policy decisions. By using a multi-pronged attack, the strengths of the two econometric tools are combined and their weaknesses are compensated for.

REMI's TranSight/Airports is the first model of its type in that it uses new *economic geography* concepts in an attempt to capture the accessibility and time savings associated with air transportation services. With an extremely strong theoretical base, using the Policy Insight economic engine at its core, and optimizing the capabilities of the new transportation mechanisms to better fit the distinctions of airports, the model fits form to function better than any previous analytic tool. However, since this approach is unique relative to existing analyses of airport economic impacts, it is also valuable to assess Bradley in a manner that is comparable to past studies.

The shortcomings of the traditional FAA approach to modeling the impacts of airports has been spelled out in previous sections. What is not emphasized, is that this approach is widely accepted and used for a number of reasons. First, the necessary input data to complete the analysis can be attained reasonably through surveys and supplemented by primary information from airport administration. Second, the analysis tool, RIMS II, is provided by the federal government at costs much lower than alternatives. Lastly, the results of these studies is reasonably accurate insofar as what it attempts to capture: the direct, indirect, and induced effects of the airport operations and visitor spending.

By using RIMS II multipliers and the FAA approach as a component of the analysis, comparisons can be made between this study and the Wilbur Smith study from 2000. Additionally, since the FAA approach has been widely adopted by other airports, the results can be compared across time to studies of peer or competitive airports in order to benchmark performance.

4.4.2 RIMS II

The Bureau of Economic Analysis' Regional Input-Output Modelling System (RIMS) offers one method of estimating economic impact. This system was developed in the 1970s as a method for estimating regional multipliers for employment, output, and final demand. RIMS II is the updated version of this approach that focuses on the trade relationships between industries, and uses both national and regional data to develop the multipliers.

RIMS II is the most widely accepted method for conducting studies of airports. The FAA, in conjunction with Wilbur Smith Associates has developed guidelines for using the multipliers to estimate the economic contributions of airports. By using this approach as a component of the overall analysis it allows comparability with other airport studies. This helps relate Bradley's economic performance with peer and competitive airports. Its familiarity is also an advantage when conveying the airport's performance to those outside of the Bradley Board, as federal officials, airline carriers, analysts and others should be more familiar with the RIMS II approach.

RIMS II is literally lists and tables of multipliers for specific regions, industries, and variables. The multipliers fall into three categories: final demand, earnings, and employment. Depending on the nature of the primary data the multipliers can be used to yield the desired results. For example, there

are employment multipliers that use both employment and output as the primary data, but both will give the results in terms of employment generated from the primary effect.

4.4.3 REMI

A more "dynamic" model for assessing these effects is the Regional Economic Models, Inc. (REMI) Policy Insight[27] modeling system. Regional Economic Models, Inc. has provided modeling tools to government organizations (of all levels) and private consultants for over 20 years. Its economic model, Policy Insight, has at its core an Input-Output (I-O) component in order to capture the supply relationships between firms. The model is unique in that it has dynamic capabilities, and 'cluster' effects. This flexible approach allows for tracking of projects over time, and incorporates the latest in economic theory.

While FAA's guidelines for conducting economic impact analysis are widely accepted, there are also well-documented instances of how to improve upon their approach to analyzing the economic impacts of airports. By using REMI, a dynamic simulation model, the impacts of the airport can be viewed over a multiple year forecast. This is especially pertinent to the Strategic and Master plans, given the long planning horizon required for both initiatives. The wide selection of variables allows for more accurate treatment of economic impacts, and its complicated economic structure produces more realistic scenarios.

DECD used a REMI model customized to the specific needs of analyzing Bradley. The model uses REMI's traditional econometric framework, but the specifications are different than the model currently used by DECD for economic development work. The new airport model has different geographic regions than the economic model, which has the State of Connecticut broken up by counties. The REMI TranSight/airports model is a national model with the State of Connecticut as the focus with the other regions comprising the other 49 states. The regions have been defined according to location, types of economies, and the flight schedule of Bradley.

4.4.4 REMI Economic Geography & Applications to Airports

Starting with the 5.0 version of REMI Policy Insight, the core structure of the model has been revamped to include a trade flow database and gravity model tendencies. By geographically mapping the trade relationships between the 3,192 counties in the United States, and in using distance decay parameters to connect the effects of accessibility with regional competitiveness, REMI has made the first step in bridging the gap between transportation changes and economic impacts. In the context of airports, the recent enhancements in econometric capabilities allows for structural linkages that capture the very time savings and accessibility concepts that are missing in earlier approaches to airport economic impacts.

Graphic 3 – TranSight/Airports Economic Geography

■	Hartford Cty
■	Western MA Cty's
■	Rest of CT
■	New England
■	New York/Jersey
■	Pennsylvania
■	Mid Atlantic
■	Mid West
■	Ohio
■	Illinois
■	Missouri
■	South East
■	Northern FL
■	Southern FL
■	Texas
■	South West
■	Southern CA
■	Northern CA
■	WA/Pacific
■	Rest of US
■	NYC/Newark
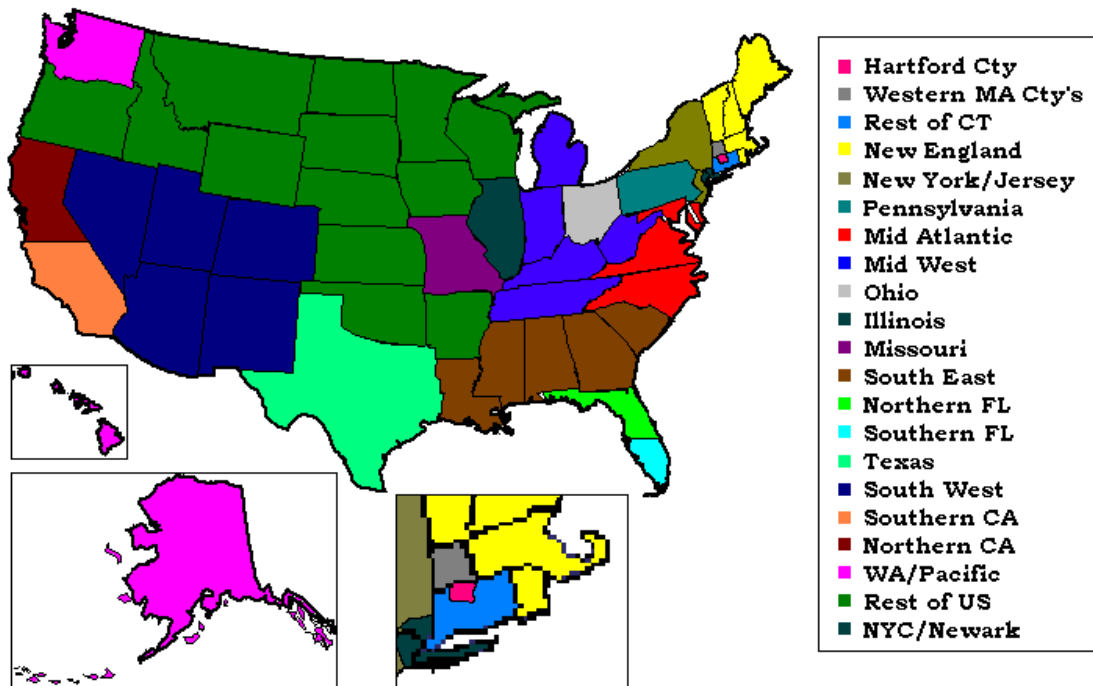
The motivation behind constructing this model is to analyze the airport for what it really is: a *transportation* facility. Even the FAA guidelines, the industry standard for conducting airport impact analysis, contain only a rudimentary approach to how airports benefit the regional economy as facilitators of air travel. Instead they focus on the effects of people employed at the airport, passenger spending, and capital expenditures.

Counter to this, DECD's approach will evaluate transportation concepts related to time savings (direct vs. connecting flights) and accessibility (# of city pairs that Bradley offer). The geographic specifications of the model allow changes to be made based on actual or hypothetical changes to the Nation's air transportation system. When these issues are combined with the traditional economic impacts of the airport's operation the result is a more complete picture of how Bradley contributes to Connecticut's economy.

4.5 Methods

4.5.1 Application of the RIMS II Multipliers

DECD follows FAA guidelines and accepted practices for using RIMS II multipliers. The FAA guidelines contains their own definitions for direct, indirect, and induced impacts (which differ slightly from standard impact analysis) and recommends a six step process for estimating economic impacts of airports:

Step 1: Determine employment at airport

Step 2: Convert airport employment to payroll

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Step 3: Determine employment and payroll at aviation-related businesses

Step 4: Calculate indirect impacts of the airport

Step 5: Calculate induced impacts of airport and aviation-related employment/payroll

Step 6: Calculate total economic impacts

The guidelines include specific instructions for each process, and details on how to apply the RIMS II multipliers.

4.5.2 Application of REMI TranSight/Airports

Although the model used in this study is the first of its kind, it still has at its center the Policy Insight engine. This means the methods used to employ TranSight/Airports is largely similar to the "best practices" employed by DECD in its regular application of the REMI Policy Insight model. However, in instances where model mechanics lack precedent and/or use transforms that are specific to the airport model, special care was taken to create a dialogue between DECD and REMI to insure proper use. As DECD had constant communication with REMI during the construction of TranSight/Airports, the model structure and formatting anticipates the objectives of the study approach and enhances the ease of use.

Different from the RIMS II application, when employing TranSight/Airports, DECD has developed multiple scenarios in order to emphasize different concepts related to airport impacts. In all of these scenarios a counterfactual approach is used.

4.5.3 Counterfactual

A counterfactual analysis involves a hypothetical scenario that is exactly "counter to the facts" of reality. This method is used because of structural characteristics of economic models. The manner in which many economic models are constructed makes use of a baseline forecast. The baseline is a picture of the economy going forward with no random changes or "shocks". However, when evaluating the effect of a new economic event (airports, new firms, construction, etc), the shocks related to the event are added to the baseline to see what the resulting change is on the economy. In the case of Bradley, a transportation facility that has been part of the Connecticut economy for many years, its presence is already accounted for in the baseline forecast. Adding the shocks of Bradley on top would be like building a second airport right next to it and measuring that scenario.

In order to get around this misinterpretation, a counterfactual approach subtracts out the shocks of Bradley, and looks at the economic footprint left behind. That is, instead of the misleading results attained by looking at a positive shock of a second major airport in Connecticut, negative shocks that mimic Bradley's operations are input to the economic model. The results represent the absolute value of the airport's contributions to the economy.

V. SCENARIOS

Four scenarios were run in this analysis: one using the RIMS II multipliers and three using REMI TranSight/Airports. The RIMS II scenario and the first REMI scenario establish a comparable impact analysis that follows a traditional approach to measuring the impact of airport operations. The second REMI scenario shows a more realistic means for estimating traveler spending impacts. The final scenario uses the full capabilities of the TranSight/Airports software to show a comprehensive estimate of the economic contributions of Bradley.

5.1 RIMS II

The use of RIMS II in this study requires only one scenario with a single set of inputs and results. In following the FAA guidelines, the inputs fall into two basic categories: **direct impacts,** as defined by the FAA, are those that "are consequences of economic activities carried out at the airport by airlines, airport management, fixed base operators, and other tenants with a direct involvement in aviation" and **indirect impacts** "include services provided by travel agencies, hotels, restaurants, and retail establishments."[2] This simulation represents the economic impacts related to the airport operations of Bradley using the RIMS II multipliers.

The above definitions are inconsistent with standard input-output economic analysis. This approach counts services directly related to air transportation that occur outside the airport as indirect.[24] Within the RIMS II framework these guidelines will be followed as they have no effect on the accuracy of the total economic impact, however, in later REMI scenarios these off airport impacts will fall under direct impacts. Another adjustment to the scenario is that airport management will not be included as part of the direct impact in order to avoid double counting. The airport (and its management) acts as lessor to airlines, fixed base operators, concessions, and other services located on airport property. Counting airport management as part of the direct impact would be counting again the same economic activity that drives the other services that actually provide air transportation services.

The inputs of the RIMS II scenario are primarily from two sources: the tenant survey conducted by DECD (which provides employment data for economic activities on the airport) and the CSRA passenger survey (which provides spending data for economic activity that occurs both on airport and in the local economy). This data is summarized below.

Table 2 - Airport Tenant Employment (Full-time equivalents)

Tenant Category	
FBO's	296
Passenger Airlines	794
Cargo Air & Brokers	828
Ground Transportation	1075
Business Services	628
Support & Operations	222
Administrative & Govt	927
Total	**4770**

Source: DECD Tenant Survey

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Table 3 - Visitor Spending ($ per person/trip)

	At Airport				In Region				
	Food/Bev	Retail	Trans	Parking	Lodging	Transport	Food/Bev	Recreation	Retail
Business	11.07	48.48	4.00	10.75	72.85	48.94	57.60	200.19	238.41
Leisure	20.69	15.09	4.00	18.56	107.54	63.03	56.01	92.00	137.82

Source: CSRA Bradley Passenger Survey

Using raw data from the passenger survey, visitor spending for non-residents (both business and leisure) is estimated. Spending impacts for Connecticut residents are not counted, since it is assumed that this is income that would otherwise be spent on consumables in the local region. Next these per-visitor spending factors are multiplied times the number of passengers that use Bradley each year.

Table 4 - Calculated visitor spending impacts (output in M$)

Spending Category	Per Visitor Output
Food/Bev	$96.9
Parking	$20.3
Lodging	$123.4
Recreation	$178.3
Retail	$234.7

Retail, food services and transit, ground transportation impacts captured in the visitor-spending component refer only to those expenditures by visitors that occur off the airport.

Since the primary inputs are composed of two economic units, employment and industry sales, two different RIMS II multipliers must be applied. For the tenant survey employment numbers "Direct-effect multipliers for employment" are used. For the passenger survey industry sales numbers "Final-demand multipliers for employment" are used. In the latter case, the dollar units of the passenger survey (nominal 2004) are first converted into the base dollar units for the RIMS II multipliers (nominal 2000).

5.2 REMI TranSight/Airports

There are three different simulation runs using the REMI TranSight/Airports model, each of which emphasizes a different component of Bradley's economic impacts.

The first simulation, referred to as *Airport Operations*, uses inputs most similar to the RIMS II approach. The second simulation, referred to as *Tourism Effect*, adopts components of the DeSalvo study in order to more accurately reflect the impact of visitor spending. The third simulation, referred to as *Airport Contribution*, is the most comprehensive scenario and includes the total impact of the airport including time savings and the value of access to other geographies and economies.

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5.2.1 Airport Operations

The *Airport Operations* scenario contains inputs related to the economic activity created by employees who are directly related to providing air transportation as well as spending in the economy that is a direct result of the airport's presence. This includes on-airport employment at airline carriers, cargo brokers and couriers, fixed base operators, business services, support and operations, and government entities. This does not include airport administration or staff in order to avoid double counting. For example, the same dollar that supports air carrier employment is also helping to support the lease payments that ultimately go to the airport. These economic consequences are accounted for in the I-O structure, and therefore do not need to be modeled directly. This assumption is reinforced by Bradley having a profitable operating margin, which implies that the sources supporting the airport are all accounted for in the direct impacts.

The purpose of this scenario is two-fold. First, it uses inputs that are almost exactly comparable to those used in the RIMS II analysis. This lends a point of comparison between the different model approaches and serves as a check on the order of magnitude of the results to justify the viability of both approaches. Second, this acts as a point of departure for the following two TranSight/Airports scenarios. In the subsequent scenarios, additional methods are employed to more accurately portray how different components of the airport affect its overall impact. It isolates the traditional approach to modeling airports in order to contrast the strict airport operations impacts with the more inclusive operation and transportation impacts.

Industry Detail and Treatment of Employment Data
The employment data from the DECD Tenant Survey is treated differently in TranSight/Airports than in RIMS II. This is due to the limitations on industry specification available in the model; while RIMS II offers 5-digit NAICS detail; TranSight/Airports only has NAICS industries at the 2-digit level. This causes an aggregation of various airport impacts into broader categories. While there is debate as to the effects of using different industry detail on the accuracy of the results, 2-digit NAICS is widely accepted as sufficient industry detail. Further, using more industry detail in the TranSight/Airports model is logistically (and financially) implausible.

Table 5 - Tenant Survey Employment Data to REMI inputs Conversion Results

Survey Data		REMI Inputs	
FBO's	296	Air Transportation	1918
Passenger Airlines	794		
Cargo Air & Brokers	828		
Retail and Concession	255	Retail	255
Ground Transportation	1075	Ground Trans	1075
Business Services	628	Business Services	850
Support & Operations	222		
Government	927	Government	927

Visitor Spending
In addition to the employment associated with on-airport operations, the *Airport Operations* scenario has visitor spending by non-residents in the Connecticut economy both on and off the airport. This data is taken from the results of the CSRA passenger survey (same as with RIMS II analysis) and built into

the TranSight/Airports model parameters. The responses of the sample passengers are summarized in the tables below.

Table 6 –Non-Resident Visitor Spending On and Off The Airport

	At Airport				In Region				
	Food/Bev	Retail	Trans	Parking	Lodging	Transport	Food/Bev	Recreation	Retail
Business	11.07	48.48	4.00	10.75	72.85	48.94	57.60	200.19	238.41
Leisure	20.69	15.09	4.00	18.56	107.54	63.03	56.01	92.00	137.82

These are the (nominal 2004) dollars spent by an average non-resident business or leisure passenger at Bradley and in the local economy per trip. This matrix of visitor spending is applied to the total number of business and leisure passengers handled by the airport. Since the airport model disaggregates the State of Connecticut to the county level (unlike the RIMS II multipliers) it is necessary to develop assumptions on the geographic allocation of the spending. The scenario allocates the spending by region according to the relative size of the industry in the specific region. For example, if Hartford county has 15% of the retail activity in the study area, then 15% of the visitor spending change for retail will occur in Hartford county.

5.2.2 Tourism Effect

The second scenario, *Tourism Effect*, contains both the on-airport employment and visitor spending featured in the *Airport Operations* scenario. However, it adds an additional concept that relates to the methods for modeling visitor spending impacts. According to DeSalvo, one of the shortcomings of existing economic impact studies is that "first…they assume that the number of visitors traveling to the local area via the airport would fall to zero in the absence of the airport. Second, (they) implicitly assume that local residents would continue to travel outside the local area in the same numbers as when the local airport is available. In other words, it is assumed that the demand for travel into the local area by visitors is perfectly elastic with respect to the time and money costs of travel, while the demand for travel by local residents is perfectly inelastic with respect to these variables."

Re-assessing traveler impacts
In order to compensate for the visitors who would still come to the State of Connecticut by other airports or modes of transportation, it is necessary to collect data estimating the reduced number of visitors (and possibly changes in the rate of spending per visitor) due to the absence of the airport. The second part, local residents who would choose not to travel outside of the state in the absence of the airport, requires a treatment of the recapturing of their income.

Due to data limitations the *Tourism Effect* scenario in this study focuses only on this second component, and only in a limited fashion. To determine the accurate recapturing of resident income and re-allocation, the elasticity of demand for resident travelers to changes in airport services, the average spending patterns of resident outgoing air travelers, and the nature of consumption reallocation must be known. In this scenario it is assumed that all Connecticut residents who would have traveled using the airport decide to cancel their trips. The average spending patterns of resident outgoing travelers is based on average tourist spending in the U.S. found in surveys by Travel Industry Association of America (TIA). Lastly, reallocation of consumption is based first, geographically, on the

population frequency of each county, and second, categorically, on the consumption demand patterns used in the REMI model that are based on BLS' data for household spending.

5.2.3 Airport Contribution

The *Airport Contribution* scenario is a new approach. The results of this scenario represent a comprehensive interpretation of the economic significance of Bradley to the State of Connecticut. While including the on-airport operations and visitor spending components, this scenario attempts to quantify the time savings and accessibility the airport provides to the local economy through the facilitation of air transportation services. This is accomplished through use of the regional capabilities of the TranSight/Airports model, which establishes baseline relationships between local industry and the airport.

No Airport Means No Air Travel
Once the baseline is established, using a counterfactual framework means that taking Bradley out of the Connecticut economy will reduce the availability air transportation for passenger and cargo purposes. This type of shock would typically have three possible responses from the existing users of the airports:

1) Use another local airport
2) Use another means of transportation
3) Cancel travel plans

Transportation methods exist for calculating the substitution effects that occur in the first two instances. However, for the purposes of this study, sufficient data could not be collected to accurately quantify these effects. Since there are plausible substitute airports (see competitive airports) to satiate a portion of both passenger and cargo demand, and since trucking, rail, and barge systems exist within the state, some fraction of Bradley users will pursue one of the first two options before canceling travel plans all together.

In light of this, it is important to note that the methods employed here represent an extreme case. As more data is collected, the TranSight/Airports model evolves, and better methods are developed, the scenarios will continue to approach a more realistic representation of what would happen if the airport is taken out of the economy.

Treatment of Business Passengers
Both business passengers and leisure passengers are inputs to the Airport Contribution scenario. However, both of these inputs trigger visitor-spending responses, while only the business passengers have an effect on time savings and accessibility. While the air transportation services provided to leisure passengers do create a time savings or amenity benefit, this is a tenuous link that requires further research and data to employ). This means that, in TranSight/Airports, modeling only non-resident leisure passengers avoids double counting Connecticut income that would have been spent in the region regardless. In the case of business passengers, both residents and non-residents make use of the airport in a way that benefits local firm interaction, however, only non-resident visitor spending should be captured as a spending impact. This means that additional (resident) spending needs to be manually taken out of the scenario.

Schematic 1 - Schematic View of Scenario Impacts

	TranSight	Policy Insight	Adjustments
All	Leisure P	*Leisure Spending*	CT Leisure Spending (exclude CT residents)
			CT Income (tourism out)
	Business P	*Business Spending*	CT Business Spending (subtract out/add back)
		TCM	
		Airport Ops	
No TCM	Leisure P	*Leisure Spending*	CT Leisure Spending (exclude CT residents)
			CT Income (tourism out)
		Non Res Business Spending	
		Airport Ops	
No TCM/Income	Leisure P	*Leisure Spending*	CT Leisure Spending (exclude CT residents)
		Non Res Business Spending	
		Airport Ops	

TCM: Transportation Cost Matrix

VI. RESULTS

The RIMS II and REMI analysis produce a wealth of data about Bradley's effect on the Connecticut economy. The economic concepts below have a basic definition, as well as how they may be used to direct decision-making on airport policies.

Employment – Employment represents the number of full time jobs created for a given year. Because of its generality, employment is an excellent yardstick to gauge the airport's benefits versus other entities in the State and against the performances of other peer or competitive airports.

Output – While jobs are easy to understand, the basic economic unit is dollars. Output is the best interpretation of the airport's dollar value to the State. Viewing the airport in dollar terms allows the Bradley Board to calculate benefit-cost and return on investment numbers, in order to see if the airport is being run competitively from a business standpoint.

State and Local Revenues – As a public entity, the airport is supported by State funds. Being able to predict Bradley's ability to generate revenue will be a strong tool in order to leverage future funds for airport improvements and maintenance. One of the initiatives of the Strategic Plan is for Bradley to be a 'good neighbor' to surrounding communities, and to focus on driving economic growth at the local level. Using counterfactual results, a clear picture of the airport's effects on local revenues will be available.

Income – Income can be used as a measure of the airport's impact on standard of living for Connecticut residents. It also has implications for the future demand for leisure passengers, and the overall market of Bradley.

6.1 RIMS II Analysis

In the RIMS II analysis Bradley created total economic impacts due to operations and visitor spending of $2.037 billion. This translates into $618.4 million paid in earnings and creation of 22,140 jobs. The table below summarizes these impacts. Dollar impacts are in 2004 dollars.

Table 7 - RIMS II Results Summary

	Direct	Indirect	Total
Employment (jobs)	9,177	12,963	22,140
Output (millions $)	794.6	1,242.9	2,037.5
Earnings (millions $)	234.9	383.6	618.4

Indirect impacts include effects derived from visitor spending: Food & Beverage, Parking, Lodging, Retail, and Recreation Establishments. Direct impacts include airport operations: Fixed Base Operators, Passenger Airlines, Cargo Airlines & Brokers, Ground Transportation, Business Services, Support and Operations Services, and Administrative and Government Services.

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6.1.1 Comparison to Wilbur Smith Study

In December 2000 Wilbur Smith Associates conducted an economic impact study of Bradley. The report used FAA recommendations for its analysis and employed the RIMS II multipliers in order to capture indirect and induced impacts. The analysis used the most recent data available (generally 1999), and featured the results of tenant and passenger surveys. Below are the results of the 2000 Wilbur Smith study compared with the current RIMS II analysis carried out by DECD. All dollar impacts have been converted to 2004 dollars.[22]

Table 8 – DECD RIMS II Results/Wilbur Smith RIMS II Results Comparison

	DECD '05	WSA '00	diff	% diff
Employment (jobs)	22,140	26,600	4,460	20.1%
Output (millions $)	2037.5	2591.3	554	27.2%
Earnings (millions $)	618.4	774.0	156	25.2%

For all three measures of economic impact the results from the 2000 Wilbur Smith study differ from the RIMS II analysis conducted as part of this study, by at least 20%. These differences can be accounted for through an examination of events that have occurred in the time period between these two analyses. It is important to remember that the Wilbur Smith study was performed shortly after one of the more dynamic expansions experienced at Bradley, which included the addition of South West as low-cost carrier. The margin is further compounded by the fact that the Wilbur Smith study was also performed shortly before the 9-11 attacks, which have had a prolonged effect on the U.S. economy in general, and most specifically, the air transportation and tourism industries. Recent passenger and cargo data for Bradley show that steady progress has been made towards reaching pre 9-11 levels of operation, however current levels are still below those that were present at the time of the Wilbur Smith study.

Although there are strong environmental reasons for the difference between the two studies, differences in methods may have contributed to some of the discrepancy. While both studies used RIMS II multipliers and followed FAA regulations, even the values of the RIMS II multipliers have changed over time. Additionally, while surveys for both passengers and tenants were conducted in both studies, the methods for the surveys were not identical, and on a more fundamental level, the make up and size of the samples were different.

6.2 REMI Analysis: *Airport Operations*

In the *Airport Operations* scenario Bradley created total economic impacts due to operations and visitor spending of $1.772 billion. This translates into $578.1 million paid in earnings and creation of 17,700 jobs. Lastly, using the fiscal module from the REMI model, net state revenues related to Bradley are more than $71.9 million. The table below summarizes these impacts. Dollar impacts are in 2004 dollars.

Table 9 – REMI Analysis: Airport Operations Results Summary

Total Impact	CT	CTWMA	CTNENY
Total Emp (jobs)	17,700	20,480	23,300
Output (M$)	$1,772.4	$1,961.0	$2,485.7
Personal Income (M$)	$578.1	$643.3	$768.4
Net State Revenues (M$)	$71.9	$79.2	$98.5

6.2.1 Comparison of RIMS II and REMI results

The Airport Operations scenario offers the best comparison between the RIMS II analysis and the REMI scenarios. This is due to similar treatment of airport operations and visitor spending impacts and, unlike the subsequent REMI scenarios; it does not make adjustments to methods for residential out-spending or time savings and accessibility impacts. For comparability, the Airport Operations scenario was run with a single year horizon in the TranSight/Airports mode in order to duplicate the "static" output from the RIMS II analysis.

The economic impacts from the two analyses bear a strong resemblance, not surprising, since they are both based on the same input-output table. The total employment impact for Bradley from the RIMS II analysis differs from the TranSight/Airports analysis by 4,440 jobs (25%), while total Output differs by $265 million (15%), and Earnings differs by $40 million (7%, but in REMI's favor).

One of the peculiarities of this comparison is that while output and employment are larger in the RIMS II analysis, earnings are larger in the REMI analysis. This is most likely due to REMI's use of regional wage data, and the fact that the REMI model responds to changes in economic activity with changes to productivity and therefore, wages. This means that there are two distinct structural linkages within the REMI model that come into play that are largely absent from the RIMS II approach.

Another concept to bear in mind when comparing the results of these two approaches is the regional capture of the different input-output tables. The RIMS II multipliers explicitly cover a geographic range, which includes, besides Connecticut, New England and New York. Given that Bradley does service passengers and firms from Massachusetts and New York, it is defensible to extend the study area into these regions. However, since the REMI model has more specific geographic controls than RIMS II, we can look at results from specific states and even counties (in Connecticut). The second and third columns of the REMI results show a more comparable set of impacts. The column labeled "CTWMA" includes all of the State of Connecticut as well as Hampshire and Berkshire counties in Massachusetts. The column labeled "CTNENY" includes Connecticut, the rest of the New England States, and New York. Using these broader geographic definitions, the impact of Bradley in REMI draws even closer comparisons to the RIMS II results.

6.3 REMI Analysis: *Tourism Effect*

The *Tourism Effect* scenario differs from the *Airport Operations* scenario in that it includes recaptured income from Connecticut residents who would have spent their money outside of the region on leisure or business trips. It also differs in that it was run over a twenty-year horizon in order to show the dynamic effects of Bradley's interaction with the local economy. The results are summarized below; dollar impacts are in nominal dollars.

Table 10 – REMI Analysis: Tourism Effect Results Summary

	2004	10 yr AVG	20 yr AVG
Employment	11,140	10839	10647
Output	$1,054.6	$1,214.4	$1,498.2
Personal Income	$364.9	$517.3	$650.1

6.3.1 Relevance of *Tourism Effect*

When comparing the results of the first year of the *Tourism Effect* scenario to the results of *Airport Operations* scenario the difference in the size of the impact measurements is striking. The *Airport Operation* results are almost twice as large in each case; for Output, *Airport Operation* results is 168% of the Output created in the *Tourism Effect* scenario. Since the principle difference between these two scenarios is the recapturing of Connecticut resident income, the results point out the glaring contradiction in previous interpretations of visitor spending impacts and the importance of airports as generators of the tourism industry.

Traditionally visitor spending impacts comprise a large role of the economic impacts of airports. For example, in the Wilbur Smith study from 2000, visitor spending impacts account for $817 million, or roughly two-thirds of the "direct" impact. While this shows the large contributions of out-of-state visitors to the local economy in terms of visitor spending, it completely ignores the "tourism trade balance" that occurs when Connecticut residents take their income out of the region when they use the airport. By tacitly taking this economic impact out of the equation the *Tourism Effect* scenario shows that it is the natural and cultural amenities that are geographically specific to the state that drive tourism spending in Connecticut, and that the airport, while a facilitator of visiting travelers, actually allows more wealth to escape the region due to tourism travel than it actually brings in from "out-of-staters."

6.3.2 Dynamic Characteristics of *Tourism Effect*

From the ten and twenty year averages in the tables above, it can be seen that the economic impacts of the airport remain relatively constant over time in the *Tourism Effect* scenario. Although the results aren't available, it is almost certain that if carried out over a multi-year horizon, that the *Airport Operations* scenario would follow a similar trend. The reason for this behavior has to do with the nature and assumptions of econometric models that employ general equilibrium tendencies. In general terms, once an economy has absorbed a shock (the loss of an airport for example) it continues operating at an adjusted threshold of economic activity, but it does recover towards its initial equilibrium. The economic reasons behind this are that many of the consequences of the shock create opportunities for return to

normalcy: as wages go down, firms become more competitive and gain back market share; as out-migration occurs, tight labor markets allow for better employment opportunity, etc. These feedback effects allow economies to recover from negative shocks in a return to pre-existing conditions. This is because while lowering the activity level in an economy weakens it, it doesn't erode underlying structural advantages of productivity, industry base, and comparative advantage. In the next scenario the long-term effects of structural changes to an economy become evident.

Chart 1 – REMI Analysis: Tourism Effect Results Over 20-Year Forecast
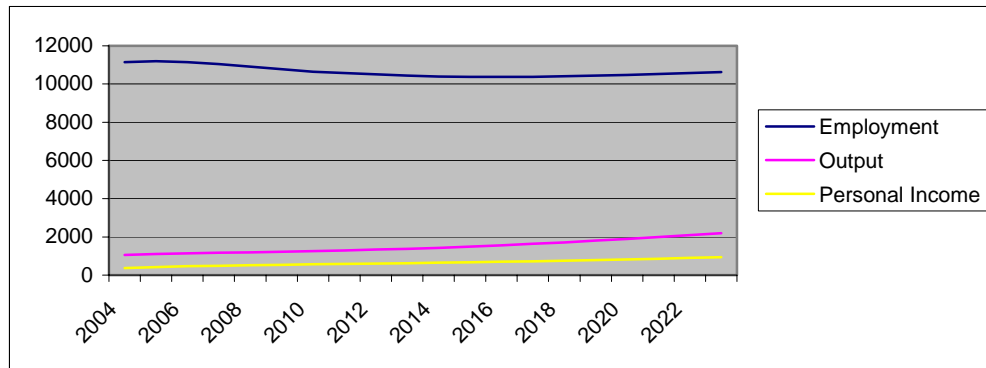
6.4 REMI Analysis: *Airport Contribution*

In the *Airport Contribution* scenario Bradley contributes economic impacts of 18,400 jobs in 2004, which amounts to $3.9 billion in output and $1.2 billion in personal income. Although these first year impacts look substantial when compared with the previous scenarios, they are really small in comparison to the 20-year annual average for employment created by the airport (140,175 jobs). The table below summarizes the increasingly large role the airport plays in the regional economy. All dollar impacts are in nominal dollars.

Table 10 – REMI Analysis: *Airport Contribution* Results Summary

	2004	10 yr AVG	20 yr AVG
Employment (jobs)	18,400	81,500	140,175
Output (M)	$3,876	$16,134	$34,605
Personal Income (M)	$1,150	$5,286	$11,478

The 20-year annual averages of the *Airport Contribution* scenario have significantly larger impacts on the State economy than the *Airport Operations* scenario. Employment impacts are 122,475 jobs per year larger, output impacts are $32.8 billion larger, and income impacts are $10.9 billion larger.

Since data was unavailable for cargo (which relates heavily with manufacturing firms), the insurance, biotech and other service sectors are affected most by the airport's presence. In the graph below we see how the major groups of industry sectors contribute to the change in employment impact. These impacts are averages over the 20-year forecast horizon.

40

Chart 2 – REMI Analysis: Airport Contribution Employment Impacts by Sector

Legend:
- Nat Res, Mining, Util, Const
- Manufacturing
- Trade
- Transp, Inform, Fin Act
- Services

Pie chart values: 6%, 14%, 18%, 25%, 37%
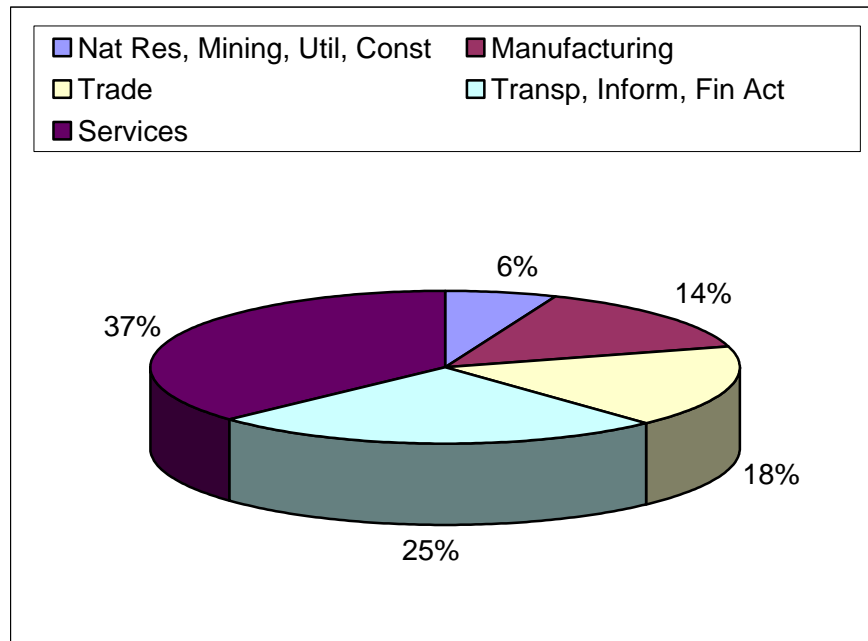
Given the wide difference in effect, it's important to understand the driving force in the impact for the *Airport Contribution* scenario. The TranSight/Airport model reduces time savings and accessibility according to the change in passengers served by the airport. In this case, which is a complete counterfactual, all of the benefits gained by taking highly efficient air travel and all of the market access afforded by the national airport system are taken away from local firms and residents. As opposed to the short-term shocks experienced by loss of economic activity associated with airport operations, the structural changes brought about by the loss of valuable transportation infrastructure have a long-term and negative impact on the Connecticut economy.

Chart 3 – REMI Analysis: Comparison of Airport Contribution and Tourism Effect Employment Results Over 20-Year Forecast

Y-axis (Employemnt): 0, 50,000, 100,000, 150,000, 200,000, 250,000
X-axis: 2004, 2006, 2008, 2010, 2012, 2014, 2016, 2018, 2020, 2022

Legend:
- Airport Contribution
- Tourism Effect

41
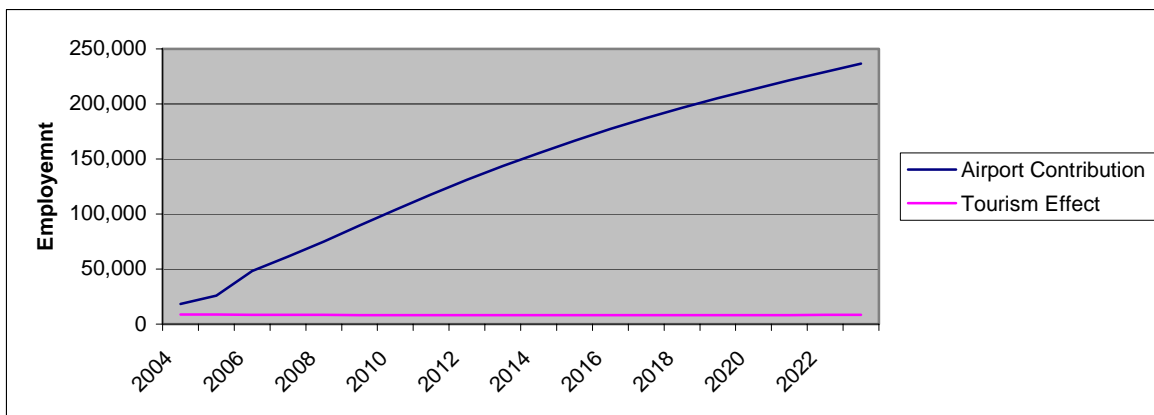
A limitation of the *Airport Contribution* scenario is that it doesn't allow substitution to other airports or modes of transportation. Realistically economic choices would be made to mitigate some of the effects of the loss of the airport. However, this scenario shows that to a large degree the economic landscape of the state would be permanently changed. If Bradley were to close, predictable outcomes would be the disintegration of the insurance and financial services industries in Hartford county, severe atrophy of supporting service and retail sectors, further erosion of the manufacturing employment base, and a general shift of population and economic activity towards Fairfield County along Interstate 95 and movement towards the New York and Boston ends of Interstate 84. These results show the large degree to which Bradley plays a critical role in the shaping of Connecticut's economic and demographic characteristics.

VII. Summary

As stated at the beginning of this report, the purpose of this study is to illustrate the importance and interconnectedness of Bradley to Connecticut's economy and future economic development. The results of this study clearly demonstrate the broad and profound influence Bradley has on Connecticut's economy. Over the next twenty years Bradley will contribute an average of $34,605 million in output and create and/or sustain an average of 140,175 direct and indirect jobs per year.

These figures highlight the importance of Bradley to Connecticut's economy and underscore the need to leverage the airport in the state's economic development efforts. As demonstrated by this report, the proper development of Bradley is paramount to Connecticut's economic future. As such it was critical that this report provide insight into how airports, specifically Bradley, facilitate economic growth beyond what has been traditionally offered and to ultimately convey a broader understanding as to how airports can and should be used to create and/or leverage economic opportunity and expand economic prosperity.

In an effort to capture the full breadth of Bradley's influence, the DECD set out to create a system of analysis that not only more comprehensively measures the impact of an airport's presence in an economy, but also provides a bridge to previous "traditional approach" impact studies.

In the face of globalization and interstate competition, the Connecticut economy continues to become more reliant on its ability to compete in national and international markets. As the stakes get higher in the increasingly dense 'New Atlantic Triangle', the comparative advantages gained by a productive and educated labor force can only be optimized with the proper infrastructure in place. Bradley is the centerpiece of the I-91 transportation corridor, and the greatest opportunity for future economic growth in the State.

Providing an adequate level of airport capacity is a fundamental ingredient in meeting expected passenger and cargo needs. Both the Master and Strategic plans offer a blueprint for guiding airport development. To assist in this effort, and in order to supplement the transportation planning involved in the process, DECD has developed a method for estimating the economic contribution of Bradley, and for weighing the economic benefits of potential Airport development alternatives.

Bradley plays a vital role in the local and regional economy as both an active employer and driver of economic impacts, but more importantly it is a critical and invaluable transportation asset that propels Connecticut's people and businesses forward in an increasingly integrated and competitive international economy.

VIII. APPENDIX

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8.3   DETAIL REMI RESULTS

Airport Operation Scenario

Variable	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total Emp (Thous)	-17.7000	-17.8000	-17.6500	-17.4700	-17.2700	-17.0700	-16.9000	-16.7800	-16.6900	-16.5400	-16.4300	-16.3500	-16.2800	-16.2400	-16.2100	-16.1900	-16.1800	-16.1800	-16.1800	-16.1900
Total GRP (Bil Chained 96$)	-0.8830	-0.9093	-0.9189	-0.9166	-0.9113	-0.9052	-0.9010	-0.8983	-0.8989	-0.9014	-0.9068	-0.9144	-0.9239	-0.9351	-0.9475	-0.9608	-0.9749	-0.9896	-1.0050	-1.0200
Total GRP (Bil Fixed 96$)	-0.9259	-0.9656	-0.9884	-0.9986	-1.0060	-1.0120	-1.0210	-1.0310	-1.0460	-1.0540	-1.0660	-1.0800	-1.0970	-1.1160	-1.1370	-1.1590	-1.1820	-1.2060	-1.2310	-1.2560
Pers Inc (Bil Nom $)	-0.5781	-0.6625	-0.7277	-0.7753	-0.8156	-0.8513	-0.8856	-0.9207	-0.9569	-0.9872	-1.0190	-1.0540	-1.0920	-1.1320	-1.1750	-1.2220	-1.2700	-1.3210	-1.3740	-1.4300
PCE-Price Index (Fixed 96$)	-0.0146	-0.0367	-0.0454	-0.0497	-0.0513	-0.0510	-0.0496	-0.0477	-0.0457	-0.0435	-0.0413	-0.0393	-0.0372	-0.0354	-0.0337	-0.0322	-0.0308	-0.0295	-0.0283	-0.0272
Real Disp Pers Inc (Bil Fixed 96$)	-0.4009	-0.4277	-0.4518	-0.4703	-0.4852	-0.4984	-0.5108	-0.5237	-0.5367	-0.5462	-0.5565	-0.5674	-0.5794	-0.5921	-0.6054	-0.6194	-0.6335	-0.6480	-0.6628	-0.6779
Demand (Bil Fixed 96$)	-1.1480	-1.2410	-1.3020	-1.3400	-1.3710	-1.3980	-1.4260	-1.4560	-1.4900	-1.5130	-1.5390	-1.5690	-1.6010	-1.6360	-1.6730	-1.7130	-1.7550	-1.7990	-1.8440	-1.8900
Output (Bil Fixed 96$)	-1.5480	-1.5880	-1.6040	-1.6020	-1.6000	-1.5990	-1.6050	-1.6150	-1.6340	-1.6480	-1.6670	-1.6910	-1.7200	-1.7530	-1.7890	-1.8280	-1.8680	-1.9100	-1.9540	-1.9980
Labor Productivity (Thous Fixed 96$)	0.5117	0.5245	0.5323	0.5326	0.5289	0.5257	0.5218	0.5192	0.5163	0.5122	0.5083	0.5043	0.5019	0.5011	0.5001	0.4998	0.5000	0.5000	0.5016	0.5029
Relative Delivered Price	-0.0002	-0.0004	-0.0004	-0.0004	-0.0005	-0.0004	-0.0004	-0.0004	-0.0004	-0.0004	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
Relative Cost of Production	-0.0003	-0.0005	-0.0006	-0.0007	-0.0007	-0.0007	-0.0006	-0.0006	-0.0006	-0.0005	-0.0005	-0.0005	-0.0004	-0.0004	-0.0004	-0.0004	-0.0003	-0.0003	-0.0003	-0.0003
Relative Labor Intensity	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Labor Access Index	-0.0001	-0.0002	-0.0003	-0.0003	-0.0004	-0.0004	-0.0004	-0.0004	-0.0004	-0.0004	-0.0005	-0.0005	-0.0005	-0.0005	-0.0005	-0.0005	-0.0005	-0.0004	-0.0004	-0.0004
Industrial Mix Index (average)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Industrial Mix Index (calculated)	0.0000	0.0000	-0.0001	-0.0002	-0.0002	-0.0003	-0.0004	-0.0004	-0.0004	-0.0005	-0.0005	-0.0005	-0.0005	-0.0005	-0.0005	-0.0005	-0.0005	-0.0005	-0.0005	-0.0005
Reg Pur Coeff (SS over Dem)	0.0015	0.0017	0.0019	0.0020	0.0020	0.0021	0.0021	0.0021	0.0022	0.0022	0.0021	0.0021	0.0021	0.0021	0.0021	0.0020	0.0020	0.0020	0.0020	0.0019
Imports from Multiregions (Bil Fixed 96$)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Imports from Rest of Nation (Bil Fixed 96$)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Imports from Rest of World (Bil Fixed 96$)	-0.0019	-0.0054	-0.0094	-0.0136	-0.0178	-0.0217	-0.0252	-0.0282	-0.0309	-0.0329	-0.0358	-0.0422	-0.0434	-0.0434	-0.0435	-0.0433	-0.0429	-0.0424	-0.0426	-0.0422
Self Supply (Bil Fixed 96$)	-0.6930	-0.7185	-0.7189	-0.7065	-0.6914	-0.6786	-0.6709	-0.6689	-0.6734	-0.6758	-0.6830	-0.6948	-0.7108	-0.7305	-0.7526	-0.7768	-0.8025	-0.8299	-0.8584	-0.8876
Exports to Multiregions (Bil Fixed 96$)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Exports to Rest of Nation (Bil Fixed 96$)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Exports to Rest of World (Bil Fixed 96$)	0.0019	0.0057	0.0101	0.0144	0.0185	0.0222	0.0253	0.0278	0.0299	0.0315	0.0328	0.0336	0.0341	0.0344	0.0344	0.0343	0.0341	0.0337	0.0334	0.0330
Exogenous Industry Sales (Bil Fixed 96$)	-0.8569	-0.8752	-0.8955	-0.9105	-0.9268	-0.9426	-0.9590	-0.9742	-0.9905	-1.0030	-1.0170	-1.0300	-1.0440	-1.0570	-1.0710	-1.0850	-1.0990	-1.1140	-1.1290	-1.1440
Exogenous Industry Demand (Bil Fixed 96$)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Ave Ann Wage Rate (Thous Nom $)	0.0988	0.0869	0.0805	0.0779	0.0776	0.0793	0.0820	0.0859	0.0899	0.0935	0.0973	0.1011	0.1051	0.1092	0.1131	0.1170	0.1208	0.1245	0.1284	0.1321
Population (Thous)	-3.3860	-6.0840	-8.2830	-10.0900	-11.5800	-12.8200	-13.8500	-14.7300	-15.4800	-16.1100	-16.6400	-17.0900	-17.4800	-17.8200	-18.1100	-18.3600	-18.5700	-18.7500	-18.8900	-19.0100
Labor Force	-3.6710	-6.0820	-7.7770	-9.0030	-9.8770	-10.5000	-10.9500	-11.2800	-11.5200	-11.7000	-11.8300	-11.9300	-11.9900	-12.0300	-12.0800	-12.1200	-12.1600	-12.2100	-12.2400	-12.2800

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Tourism Effect Scenario

Variable	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total Emp (Thous)	-11.1400	-11.2000	-11.1500	-11.0500	-10.9100	-10.7700	-10.6500	-10.5700	-10.5100	-10.4400	-10.3900	-10.3700	-10.3700	-10.3800	-10.4000	-10.4400	-10.4800	-10.5200	-10.5700	-10.6300
Total GRP (Bil Chained 96$)	-0.5322	-0.5484	-0.5566	-0.5552	-0.5510	-0.5463	-0.5428	-0.5408	-0.5406	-0.5442	-0.5497	-0.5574	-0.5666	-0.5771	-0.5883	-0.6008	-0.6137	-0.6272	-0.6409	-0.6551
Total GRP (Bil Fixed 96$)	-0.5580	-0.5824	-0.5987	-0.6049	-0.6082	-0.6109	-0.6150	-0.6208	-0.6289	-0.6364	-0.6461	-0.6586	-0.6729	-0.6890	-0.7061	-0.7249	-0.7442	-0.7644	-0.7853	-0.8068
Pers Inc (Bil Nom $)	-0.3649	-0.4186	-0.4617	-0.4924	-0.5178	-0.5401	-0.5615	-0.5836	-0.6064	-0.6269	-0.6488	-0.6728	-0.6992	-0.7277	-0.7581	-0.7913	-0.8257	-0.8624	-0.9009	-0.9415
PCE-Price Index (Fixed 96$)	-0.0091	-0.0234	-0.0292	-0.0322	-0.0334	-0.0334	-0.0327	-0.0316	-0.0305	-0.0293	-0.0281	-0.0270	-0.0259	-0.0250	-0.0241	-0.0234	-0.0227	-0.0221	-0.0216	-0.0211
Real Disp Pers Inc (Bil Fixed 96$)	-0.2530	-0.2698	-0.2860	-0.2978	-0.3069	-0.3147	-0.3221	-0.3301	-0.3380	-0.3446	-0.3517	-0.3595	-0.3682	-0.3775	-0.3871	-0.3976	-0.4082	-0.4192	-0.4304	-0.4419
Demand (Bil Fixed 96$)	-0.1476	-0.1978	-0.2335	-0.2526	-0.2633	-0.2716	-0.2805	-0.2920	-0.3052	-0.3216	-0.3389	-0.3601	-0.3844	-0.4114	-0.4401	-0.4721	-0.5051	-0.5398	-0.5764	-0.6138
Output (Bil Fixed 96$)	-0.9211	-0.9470	-0.9625	-0.9627	-0.9611	-0.9606	-0.9644	-0.9722	-0.9851	-0.9988	-1.0160	-1.0390	-1.0640	-1.0920	-1.1230	-1.1560	-1.1900	-1.2260	-1.2630	-1.3010
Labor Productivity (Thous Fixed 96$)	0.3184	0.3255	0.3305	0.3301	0.3265	0.3231	0.3191	0.3163	0.3130	0.3101	0.3067	0.3033	0.3015	0.3007	0.2999	0.2997	0.2999	0.2999	0.3011	0.3019
Relative Delivered Price	-0.0001	-0.0002	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0001
Relative Cost of Production	-0.0002	-0.0003	-0.0004	-0.0004	-0.0005	-0.0004	-0.0004	-0.0004	-0.0004	-0.0004	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0002	-0.0002	-0.0002
Relative Labor Intensity	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Labor Access Index	-0.0001	-0.0001	-0.0002	-0.0002	-0.0002	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003
Industrial Mix Index (average)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Industrial Mix Index (calculated)	0.0000	0.0000	-0.0001	-0.0001	-0.0001	-0.0002	-0.0002	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003
Reg Pur Coeff (SS over Dem)	0.0003	0.0004	0.0005	0.0006	0.0007	0.0007	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0009	0.0009	0.0009	0.0009	0.0009
Imports from Multiregions (Bil Fixed 96$)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Imports from Rest of Nation (Bil Fixed 96$)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Imports from Rest of World (Bil Fixed 96$)	-0.0012	-0.0034	-0.0060	-0.0087	-0.0114	-0.0140	-0.0163	-0.0183	-0.0202	-0.0213	-0.0216	-0.0157	-0.0133	-0.0126	-0.0121	-0.0115	-0.0112	-0.0111	-0.0110	-0.0109
Self Supply (Bil Fixed 96$)	-0.0655	-0.0755	-0.0736	-0.0618	-0.0464	-0.0326	-0.0220	-0.0165	-0.0144	-0.0165	-0.0217	-0.0311	-0.0436	-0.0589	-0.0754	-0.0948	-0.1147	-0.1359	-0.1584	-0.1815
Exports to Multiregions (Bil Fixed 96$)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Exports to Rest of Nation (Bil Fixed 96$)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Exports to Rest of World (Bil Fixed 96$)	0.0013	0.0037	0.0066	0.0095	0.0122	0.0146	0.0168	0.0185	0.0199	0.0211	0.0220	0.0227	0.0232	0.0235	0.0237	0.0238	0.0239	0.0238	0.0238	0.0237
Exogenous Industry Sales (Bil Fixed 96$)	-0.8569	-0.8752	-0.8955	-0.9105	-0.9268	-0.9426	-0.9591	-0.9742	-0.9906	-1.0030	-1.0170	-1.0300	-1.0440	-1.0570	-1.0710	-1.0850	-1.0990	-1.1140	-1.1290	-1.1440
Exogenous Industry Demand (Bil Fixed 96$)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Ave Ann Wage Rate (Thous Nom $)	0.0620	0.0540	0.0497	0.0478	0.0472	0.0479	0.0493	0.0515	0.0537	0.0560	0.0583	0.0606	0.0632	0.0658	0.0683	0.0709	0.0734	0.0759	0.0785	0.0811
Population (Thous)	-2.0570	-3.6920	-5.0320	-6.1320	-7.0310	-7.7720	-8.3850	-8.9030	-9.3410	-9.7140	-10.0300	-10.3100	-10.5600	-10.7800	-10.9700	-11.1500	-11.3100	-11.4600	-11.5900	-11.7000
Labor Force	-2.2410	-3.7320	-4.7860	-5.5480	-6.0860	-6.4640	-6.7300	-6.9250	-7.0640	-7.1730	-7.2560	-7.3280	-7.3780	-7.4230	-7.4690	-7.5180	-7.5760	-7.6320	-7.6860	-7.7390

The Contribution Of Bradley International Airport To Connecticut's Economy
A Department of Economic and Community Development Economic Impact Analysis

Airport Contribution Scenario

Variable	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total Emp (Thous)	-48.3600	-61.3000	-75.0800	-89.4500	-103.9000	-117.8000	-131.1000	-143.6000	-155.2000	-166.5000	-177.2000	-187.2000	-196.5000	-205.1000	-213.5000	-221.5000	-229.1000	-236.7000
Total GRP (Bil Chained 96$)	-3.6030	-4.6120	-5.7430	-6.9140	-8.1170	-9.3060	-10.4800	-11.5800	-12.6400	-13.7000	-14.7500	-15.7700	-16.7500	-17.6900	-18.6200	-19.5400	-20.4300	-21.3300
Total GRP (Bil Fixed 96$)	-3.7780	-4.8980	-6.1770	-7.5330	-8.9590	-10.4100	-11.8700	-13.2900	-14.7000	-16.0200	-17.3400	-18.6400	-19.8900	-21.1200	-22.3500	-23.5700	-24.7800	-26.0000
Pers Inc (Bil Nom $)	-2.6170	-3.4820	-4.4890	-5.5500	-6.6850	-7.8640	-9.0850	-10.3300	-11.5800	-12.8400	-14.1400	-15.4700	-16.8200	-18.2100	-19.6400	-21.1200	-22.6500	-24.2400
PCE-Price Index (Fixed 96$)	1.5720	1.9510	2.3030	2.6140	2.8930	3.1450	3.3750	3.5870	3.7870	4.0040	4.2070	4.4020	4.5900	4.7760	4.9580	5.1390	5.3200	5.5020
Real Disp Pers Inc (Bil Fixed 96$)	-3.4820	-4.4260	-5.4170	-6.3790	-7.3360	-8.2600	-9.1610	-10.0200	-10.8500	-11.6800	-12.4900	-13.2900	-14.0800	-14.8500	-15.6200	-16.3900	-17.1600	-17.9400
Demand (Bil Fixed 96$)	-3.2840	-4.4340	-5.8220	-7.3860	-9.0650	-10.7900	-12.5400	-14.2500	-15.9400	-17.5800	-19.2400	-20.8800	-22.4700	-24.0500	-25.6300	-27.2200	-28.8200	-30.4500
Output (Bil Fixed 96$)	-6.9660	-8.8910	-11.0700	-13.3200	-15.6500	-17.9600	-20.2500	-22.4200	-24.5300	-26.7000	-28.8600	-31.0000	-33.0600	-35.0900	-37.1100	-39.1300	-41.1300	-43.1600
Labor Productivity (Thous Fixed 96$)	-0.2748	-0.2858	-0.3024	-0.3224	-0.3440	-0.3617	-0.3763	-0.3822	-0.3866	-0.4211	-0.4563	-0.4874	-0.5132	-0.5298	-0.5425	-0.5424	-0.5337	-0.5119
Relative Delivered Price	0.0137	0.0169	0.0197	0.0222	0.0243	0.0261	0.0277	0.0291	0.0304	0.0317	0.0328	0.0338	0.0347	0.0355	0.0362	0.0369	0.0376	0.0382
Relative Cost of Production	0.0198	0.0246	0.0288	0.0325	0.0357	0.0385	0.0409	0.0431	0.0451	0.0471	0.0489	0.0505	0.0519	0.0533	0.0545	0.0556	0.0567	0.0577
Relative Labor Intensity	0.0003	0.0004	0.0005	0.0006	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0006	0.0006	0.0005	0.0004	0.0002	0.0001	0.0000
Labor Access Index	-0.0007	-0.0010	-0.0014	-0.0017	-0.0021	-0.0025	-0.0028	-0.0032	-0.0036	-0.0040	-0.0043	-0.0046	-0.0050	-0.0053	-0.0055	-0.0058	-0.0061	-0.0063
Industrial Mix Index (average)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Industrial Mix Index (calculated)	0.0005	0.0008	0.0011	0.0015	0.0020	0.0026	0.0033	0.0041	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051
Reg Pur Coeff (SS over Dem)	-0.0101	-0.0121	-0.0139	-0.0155	-0.0168	-0.0180	-0.0190	-0.0198	-0.0205	-0.0213	-0.0221	-0.0227	-0.0232	-0.0237	-0.0241	-0.0245	-0.0247	-0.0250
Imports from Multiregions (Bil Fixed 96$)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Imports from Rest of Nation (Bil Fixed 96$)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Imports from Rest of World (Bil Fixed 96$)	0.4111	0.6402	0.8939	1.1850	1.4660	1.7490	2.0340	2.3170	2.6100	2.8730	3.1400	3.3920	3.6360	3.8860	4.1360	4.3900	4.6440	4.9020
Self Supply (Bil Fixed 96$)	-5.8070	-7.5440	-9.5090	-11.5500	-13.6600	-15.7500	-17.8200	-19.7800	-21.6700	-23.6300	-25.5700	-27.4700	-29.3000	-31.1000	-32.8900	-34.6700	-36.4400	-38.2400
Exports to Multiregions (Bil Fixed 96$)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Exports to Rest of Nation (Bil Fixed 96$)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Exports to Rest of World (Bil Fixed 96$)	-0.3018	-0.4723	-0.6641	-0.8615	-1.0640	-1.2680	-1.4710	-1.6680	-1.8610	-2.0700	-2.2830	-2.5000	-2.7160	-2.9340	-3.1500	-3.3710	-3.5910	-3.8110
Exogenous Industry Sales (Bil Fixed 96$)	-0.8568	-0.8750	-0.8952	-0.9102	-0.9265	-0.9422	-0.9586	-0.9737	-0.9900	-1.0030	-1.0160	-1.0300	-1.0430	-1.0560	-1.0700	-1.0840	-1.0990	-1.1130
Exogenous Industry Demand (Bil Fixed 96$)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Ave Ann Wage Rate (Thous Nom $)	-0.1118	-0.0794	-0.0328	0.0248	0.0912	0.1655	0.2467	0.3344	0.4260	0.5175	0.6115	0.7087	0.8093	0.9137	1.0210	1.1310	1.2440	1.3610
Population (Thous)	-59.6500	-89.1600	-120.5000	-152.8000	-185.5000	-217.9000	-249.7000	-280.6000	-310.2000	-338.8000	-366.2000	-392.4000	-417.3000	-440.9000	-463.5000	-485.0000	-505.4000	-524.8000
Labor Force	-40.2100	-57.9000	-75.8700	-93.9200	-111.7000	-128.8000	-145.2000	-160.8000	-175.3000	-189.1000	-202.0000	-214.0000	-225.0000	-235.3000	-245.1000	-254.4000	-263.3000	-271.9000

The Contribution Of Bradley International Airport To Connecticut's Economy
A Department of Economic and Community Development Economic Impact Analysis

8.4   SURVEYS

8.3.1 Passenger Survey

Methodology - The Center for Survey Research and Analysis at the University of Connecticut (CSRA) was commissioned by the Connecticut Department of Economic and Community Development to conduct a survey of airport travelers in December of 2004. A total of 685 travelers were surveyed with 417 regional residents and 268 visitors to the region. Airport intercept interviews were conducted by trained CSRA interviewers to enplaning and deplaning travelers. Respondents were randomly selected by gate and time of the day. The survey outlines the reason of travel, destinations, frequency of travel, amount of money spent, and transportation used to/from the airport.

Purpose – The results of the survey play a key role both in the development of the TranSight/Airports model, and with the ensuing analysis. Specifically, the split between business and leisure travelers, the spending behaviors of both groups, and the industries of the business travelers helped shape the parameters in the baseline and structural linkages in the TranSight/Airport models. The geographic dispersion of the travelers, the spending amounts for various goods at the airport, and the nature of travel for business travelers are key inputs to the counterfactual analysis using the TranSight/Airports model.

Bradley International Airport Travelers Survey

The University of Connecticut Center for Survey Research and Analysis is conducting this survey on behalf of the Connecticut Department of Transportation and the Department of Economic and Community Development. We are interested in learning your opinions about travel at Bradley International Airport. The results will be used to improve travel experiences at Bradley International Airport. Please answer in the spaces provided marking ONE choice per question.
Thank you for your cooperation!

1. Where do you live?
City: _____
State: _____

2. What is the MAIN purpose of your trip?
__ 1. Business travel
__ 2. Leisure travel
__ 3. Combination of business and leisure
__ 4. School travel
__ 5. Something else (Specify)

_____

3. Which airline are you flying?
_____

4. Where are you flying to? Final destination
Destination airport: _____
Destination city/state: _____

5. How many days will your trip last? _____

6. Are you flying non-stop to your final destination or do you have a connection?
__ 1. Non-stop flight to final destination
__ 2. Connection(s) to final destination

7. Which cabin do you travel in most often?
__ 1. First class
__ 2. Business class
__ 3. Economy class

8. Approximately, how much did your plane ticket cost? $_____

9. In the past 12 months, how many times did you fly out of Bradley International Airport?
_____

10. How much time will you spend in the airport before your plane leaves? _____

11. How would you rate the availability of food and beverages in the airport?
__ 1. Excellent
__ 2. Very good
__ 3. Good
__ 4. Fair
__ 5. Poor

12. Overall, how much will you spend on food or beverages at the airport? $_____

13. How would you rate the availability of retail or shopping stores in the airport?
__ 1. Excellent
__ 2. Very good
__ 3. Good
__ 4. Fair
__ 5. Poor

14. Overall, how much will you spend in retail stores and shopping at the airport, *not including food or beverages*? $_____

15. Where did you spend most of your time during your trip?
__ 1. Connecticut
__ 2. Massachusetts
__ 3. Rhode Island
__ 4. New York
__ 5. Other (SPECIFY)

_____

16. How many days did your trip last?

_____

17. Where did you stay during your visit?
    __ 1. Hotel
    __ 2. Motel
    __ 3. Resort
    __ 4. Bread & Breakfast (B&Bs)
    __ 5. Homes of family and/or friends

18. How much did you spend on lodging per day?
$_____

19. How did you travel around during your stay? (Private vehicle, shuttle, taxi, bus, etc…)
    _____

20. How much did you spend on transportation per day? $_____

21. How much did you spend on food and beverages during your stay? $_____

22. What sites did you visit during your stay? Please check all that apply.
    __ 1. Casino(s)
    __ 2. Zoo or Aquariums
    __ 3. The Beach
    __ 4. Fine Dining
    __ 5. Historic Sites
    __ 6. Shopping
    __ 7. Outdoor activities
    __ 8. Art Galleries and Museums
    __ 9. Sporting Event
    __ 10. State Capitol
    __ 11. Gardens
    __ 12. Other (Specify)
        _____

23. How much did you spend on recreational activities such as site visits, cultural events, or sport events? $_____

24. How much did you spend on shopping or retail stores? $_____

25. Do you plan to return in the Connecticut area in the next 12 months?
    __ 1.Yes   __ 2. No

26. Would you recommend friends, relatives, or co-workers to visit the Connecticut area?
    __ 1. Yes   __ 2. No

27. How many other people are you traveling with? _____

28. In what year were you born?
        _____

29. Please state your Gender. You are:
        __ 1. Male   __ 2. Female

30. What is your primary occupation?
        _____

31. What is your total household income?
    __ 1. Less than $20,000
    __ 2. $20,000 to less than $40,000
    __ 3. $40,000 to less than $60,000
    __ 4. $60,000 to less than $80,000
    __ 5. $80,000 to less than $100,000
    __ 6. $100,000 to less than $120,000
    __ 7. $120,000 to less than $140,000
    __ 8. $140,000 or more

Bradley International Airport Travelers Survey

The University of Connecticut Center for Survey Research and Analysis is conducting this survey on behalf of the Connecticut Department of Transportation and the Department of Economic and Community Development. We are interested in learning your opinions about travel at Bradley International Airport. The results will be used to improve travel experiences at Bradley International Airport. Please answer in the spaces provided marking ONE choice per question.
Thank you for your cooperation!

1. Where do you live?
City: _____
State: _____

2. What is the MAIN purpose of your trip?
__ 1. Business travel
__ 2. Leisure travel
__ 3. Combination of business and leisure
__ 4. School travel
__ 5. Something else (Specify)
_____

3. Which airline did you fly on?
_____

4. Where did you fly from?
Departing airport: _____
Departing city/state: _____

5. Did you fly non-stop to Bradley Airport from your original destination or did you have a connection?
__ 1. Non-stop flight to Bradley Airport
__ 2. Connection(s) before Bradley Airport

6. Which cabin do you travel in most often?
__ 1. First class
__ 2. Business class
__ 3. Economy class

7. Approximately, how much did your plane ticket cost? $_____

8. In the past 12 months, how many times did you fly into Bradley International Airport?_____

9. How many days do you intend to stay in the area? _____

10. Where are you going to spend most of your time during your trip?
__ 1. Connecticut
__ 2. Massachusetts
__ 3. Rhode Island
__ 4. New York
__ 5. Other (SPECIFY)
_____

11. Where do you intend to stay?
__ 1. Hotel
__ 2. Motel
__ 3. Resort
__ 4. Bread & Breakfast (B&Bs)
__ 5. Home of family and/or friends

12. How much do you plan to spend on lodging per day? $_____

13. How will you travel around the area? (Private vehicle, rental car, shuttle, bus, etc…)
_____

14. How much do you plan to spend on transportation per day? $_____

15. How much will you spend on airport parking fees? $_____

16. How much do you plan to spend per day on food and beverages during your stay?
$_____

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17. What sites do you plan to visit during your stay? Please check all that apply.

    __ 1. Casino
    __ 2. Zoo or Aquariums
    __ 3. Beach
    __ 4. Fine Dining
    __ 5. Historic Sites
    __ 6. Shopping
    __ 7. Outdoor activities
    __ 8. Art Galleries and Museums
    __ 9. Sporting Event
    __ 10. State Capitol
    __ 11. Gardens
    __ 12. Other (Specify)

    _____

18. How much do you plan to spend on recreational activities such as site visits, cultural events, or sport events?

    $_____

19. How much do you plan to spend on shopping and retail stores?

    $_____

20. How many other people are you traveling with?

    $_____

21. In what year were you born?

    _____

22. You are:

    __ 1. Male   __ 2. Female

23. What is your primary occupation?

    _____

24. What is your total household income?

    __ 1. Less than $20,000
    __ 2. $20,000 to less than $40,000
    __ 3. $40,000 to less than $60,000
    __ 4. $60,000 to less than $80,000
    __ 5. $80,000 to less than $100,000
    __ 6. $100,000 to less than $120,000
    __ 7. $120,000 to less than $140,000
    __ 8. $140,000 or more

Bradley International Airport Travelers Survey

The University of Connecticut Center for Survey Research and Analysis is conducting this survey on behalf of the Connecticut Department of Transportation and the Department of Economic and Community Development. We are interested in learning your opinions about travel at Bradley International Airport. The results will be used to improve travel experiences at Bradley International Airport. Please answer in the spaces provided marking ONE choice per question.
Thank you for your cooperation!

1. Where do you live?
City: _____
State: _____

2. What is the MAIN purpose of your trip?
__ 1. Business travel
__ 2. Leisure travel
__ 3. Combination of business and leisure
__ 4. School travel
__ 5. Something else (Specify)

_____

3. Which airline are you flying?
_____

4. Where are you flying to? Final destination
Destination airport: _____
Destination city/state: _____

5. How many days will your trip last? _____

6. Are you flying non-stop to your final destination or do you have a connection?
__ 1. Non-stop flight to destination
__ 2. Connection(s) to final destination

7. Which cabin do you travel in most often?
__ 1. First class
__ 2. Business class
__ 3. Economy class

8. In the past 12 months, how many times did you fly out of Bradley International Airport?
_____

9. How much time will you spend in the airport before your plane leaves? _____

10. How would you rate the availability of food and beverages in the airport?
__ 1. Excellent
__ 2. Very good
__ 3. Good
__ 4. Fair
__ 5. Poor

11. Overall, how much will you spend on food or beverages at the airport? $_____

12. How would you rate the availability of retail stores and shopping in the airport?
__ 1. Excellent
__ 2. Very good
__ 3. Good
__ 4. Fair
__ 5. Poor

13. Overall, how much will you spend in retail stores and shopping at the airport, *not including food or beverages*? $_____

14. Approximately, how much did your plane ticket cost? $_____

15. How did you get to the airport? (Private vehicle, shuttle, taxi, bus, etc…)
_____

16. How much did you spend on transportation to get to the airport, if any? $_____

17. How much will you spend on airport parking per day? $_____

18. How many other people are you traveling with? _____

19. In what year were you born? _____

20. You are: __ 1. Male __ 2. Female

21. What is your primary occupation?
_____

Q21. What is your total household income?
__ 1. Less than $20,000
__ 2. $20,000 to less than $40,000
__ 3. $40,000 to less than $60,000
__ 4. $60,000 to less than $80,000
__ 5. $80,000 to less than $100,000
__ 6. $100,000 to less than $120,000
__ 7. $120,000 to less than $140,000
__ 8. $140,000 or more

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Bradley International Airport Travelers Survey

The University of Connecticut Center for Survey Research and Analysis is conducting this survey on behalf of the Connecticut Department of Transportation and the Department of Economic and Community Development. We are interested in learning your opinions about travel at Bradley International Airport. The results will be used to improve travel experiences at Bradley International Airport. Please answer in the spaces provided marking ONE choice per question.
Thank you for your cooperation!

1. Where do you live?
 City: _____
 State: _____

2. What is the MAIN purpose of your trip?
 __ 1. Business travel
 __ 2. Leisure travel
 __ 3. Combination of business and leisure
 __ 4. School travel
 __ 5. Something else (Specify)
  _____

3. Which airline did you fly on?
 _____

4. Where did you fly from?
 Departing airport: _____
 Departing city/state: _____

5. Did you fly non-stop to Bradley Airport from your original destination or did you have a connection?
 __ 1. Non-stop flight to Bradley
 __ 2. Connection(s) before Bradley

6. Which cabin do you travel in most often?
 __ 1. First class
 __ 2. Business class
 __ 3. Economy class

7. How many days did your trip last? _____

8. Approximately, how much did your plane ticket cost? $_____

9. In the past 12 months, how many times did you fly into Bradley International Airport?
 _____

10. How will you be getting to your final destination? (Private vehicle, rental car, taxi, bus, etc…) _____

11. How much will you spend in transportation *not including airport parking fees* to get back to your home or final destination? $_____

12. How much will you pay for airport parking per day? $_____

13. How many other people are you traveling with? _____

14. In what year were you born? _____

15. You are: __ 1. Male __ 2. Female

16. What is your primary occupation?
 _____

17. What is your total household income?
 __ 1. Less than $20,000
 __ 2. $20,000 to less than $40,000
 __ 3. $40,000 to less than $60,000
 __ 4. $60,000 to less than $80,000
 __ 5. $80,000 to less than $100,000
 __ 6. $100,000 to less than $120,000
 __ 7. $120,000 to less than $140,000
 __ 8. $140,000 or more

8.3.2 Business Survey

Methodology - DECD commissioned the CSRA to conduct a survey of regional businesses and institutions. Results are based on 400 telephone interviews conducted across the region. The interviews were conducted by trained interviewers from the CSRA research facility in Storrs, Connecticut between March 18 and April 6, 2005. Businesses and institutions within the vicinity of Bradley International Airport were interviewed to assess their level of dependence on the airport. The sample was generated using the databases and software from Dun and Bradstreet and only businesses with 25 employees or more were selected in the sample frame. Interviews were conducted with local businesses and institutions that use Bradley International Airport for business travel and/or cargo transportation purposes. The survey provides a summary of regional business and institutions use of Bradley International Airport for business travel and transportation of cargo purposes.

Purpose – The business survey contributes less to the passenger component of the TranSight/Airports model, but is crucial in estimating relationships between cargo and economic impacts when combined with the national input-output matrix. The data establishes to what degree local firms rely on air transportation both in exploring and enriching export markets, and what kind of cost savings are created by receiving intermediate inputs via air as opposed to other modes.

BRADLEY INTERNATIONAL AIRPORT BUSINESS SURVEY

INT. I'm calling from the University of Connecticut. We're conducting a survey for the Connecticut Department of Economic and Community Development and the Department of Transportation regarding the Economic Impact of Bradley International Airport in the region. I need to speak with _____ or someone who is in a management position.
It will only take a few minutes of his/her time.

We're conducting a survey…. I need to speak with a finance officer, or manager in the finance department, who could speak to your business's employee travel and air freight shipping.

Small business: We're conducting a survey…Could I speak to the business manager?

Corporation: We're conducting a survey…Could I speak to your manager in charge of business travel and air freight shipping?

[We'd like to talk to you about your attitudes on some matters affecting your business. It won't take more than a few minutes. Is this a good time for you?]

Our records indicate that the name of your business is _____. Is that correct?

Q1. What airport does your company use **most** often for business travel?
ASK AS OPEN ENDED. CODE INTO CATEGORIES
Bradley International Airport → Q2a
Other airports   → Q2b

Q2a. If you couldn't use Bradley International Airport, what airport would your company use the **most** for business travel?
ASK AS OPEN ENDED

Q2b. What other airports does your company use for business travel?
ASK AS OPEN ENDED

Q3. What is the MAIN reason why you use Bradley International Airport for business travel?
ASK OPEN ENDED

Q4. How many total trips did your company make this past fiscal year using Bradley International Airport?
RECORD NUMBER OF TRIPS

Q5. On average, how many employees take part of the trip?
RECORD AVERAGE NUMBER OF EMPLOYEES

Q6. When you can choose from more than one airport to reach your destination, what are the most important factors in making your decision for business travel? (ASK AS OPEN ENDED)
Location
Airlines
Destinations
Schedule
Other (Specify)

Q7. Approximately how much did your company spend on business travel this past fiscal year?
Range in $

Q8. What percentage of your company total business costs does business travel represent?
Less than 5%
5% to less than 10%
10% to less than 20%
20% to less than 30%
30% to less than 50%
50% or more

Q9. In the next year, do you think business travel with Bradley International will increase significantly, increase somewhat, stay about the same, decrease somewhat or decrease significantly?
Increase significantly
Increase somewhat
Stay about the same
Decrease somewhat
Decrease significantly

Q10. What would you say is the **most** needed improvement at Bradley International Airport in terms of business travel? ASK AS OPEN ENDED THEN CODE INTO CATEGORIES
Safety/terrorist concerns
Flight delays
Customer service
Corporate travel policy restrictions
Work-life balance
Other (Specify)

Q11. What cities have employees of your company traveled to the most in the past fiscal year using Bradley International Airport?
ACCEPT UP TO 5 ANSWERS. RECORD CITY/CITIES

Q12. Thinking about travel in your organization, could you tell what the top reasons for business travel are and for each please tell me what percentage of total business travel each of these represent? (ASK AS OPEN ENDED AND CODE INTO CATEGORIES)

Reasons	**%**
a. Sales or marketing visit	
b. Client contact	
c. Visiting other units of your own company	

d. Vendor visit
e. Convention or trade shows
f. Training
g. Other (specify) _____

OR

Thinking about business travel in your organization, what percentage of total business travel would you say is spent on sales or marketing visit, client contact, visiting other units of your own company, vendor visit, convention or trade shows, training, etc . . .?

(RANDOMIZE ORDER)	%	Does not apply	DK	Ref.
a. Sales or marketing visit				
b. Client contact				
c. Visiting other units of your own company				
d. Vendor visit				
e. Convention or trade shows				
f. Training				

Q12g. Is there anything else other than what has already been mentioned? (If yes, what percentage of total business travel does this represent?)
RECORD _____
No, nothing else

Q13. How do your employees on a business trip usually get to/from Bradley International Airport?
Personal vehicle
Company van/shuttle
Private Airport shuttle
Taxi/Limo
Public Transportation
Rental Car
Q14. If you couldn't use Bradley International Airport for business travel purposes, what would be the biggest impact on your business?
ASK AS OPEN ENDED

Changing the subject a bit . . .

Q15. Does your company use Bradley International Airport for freight and cargo purposes? Please do not include use of freight companies such as FedEx, UPS, DHL.
Yes

No

IQ16. How often does your company use Bradley International Airport for each of the following?

Q16. Would you say your company use Bradley International Airport for national shipments a lot, sometimes, not too much, or not at all?
A lot
Sometimes
Not too much
Not at all

Q17. Would you say your company use Bradley International Airport for international shipments a lot, sometimes, not too much, or not at all?
A lot
Sometimes
Not too much
Not at all

Q18. What cargo do you ship using air freight at Bradley International Airport?
ASK AS OPEN ENDED. RECORD GOODS

Q19. What cargo do you receive using air freight at Bradley International Airport?
ASK AS OPEN ENDED. RECORD GOODS

Q20. Overall, comparing Bradley International Airport to other airports where a company like yours could do business, do you think air freight cargo costs are much higher at Bradley International Airport than in other airports, somewhat higher, about the same, somewhat lower or much lower at Bradley International Airport?
Much higher
Somewhat higher
About the same
Somewhat lower
Much higher

Q21. Approximately, how much did your company spend on air freight cargo using Bradley International Airport this past fiscal year?
Range in $

Q22. What percentage of your company total business costs does air freight cargo represent?
Less than 5%
5% to less than 10%
10% to less than 20%
20% to less than 30%
30% to less than 50%
50% or more

Q23. How many tons of goods or materials did your company ship out in the fiscal year 2004 using freight cargo at Bradley International Airport?

Give range

Q24. How many tons of goods or materials did your company receive in the fiscal year 2004 using freight cargo at Bradley International Airport?
Give range

Q25. Which cities do you usually ship goods to using air freight and cargo at Bradley International Airport?
RECORD CITY/CITIES. ALLOW UP TO 6 ANSWERS

Q26. Why use air freight and cargo rather than other forms of transport?
RECORD VERBATIM. ACCEPT UP TO 6 ANSWERS

Q27. If you couldn't use Bradley International Airport for air freight cargo purposes, what airport would you use?
RECORD VERBATIM. ALLOW MULTIPLE ANSWERS

Q28. If you couldn't use Bradley International Airport for air freight cargo purposes, what would be the biggest impact on your business?
ASK AS OPEN ENDED

Q29. In the next year do you think your company use of air freight cargo at Bradley International Airport will increase significantly, increase somewhat, stay about the same, decrease somewhat or decrease significantly?
Increase significantly
Increase somewhat
Stay about the same
Decrease somewhat
Decrease significantly

Demographics

IQD1 Finally, I just need to ask a couple of questions about your company for classification purposes.

IQD1a. As you may know, a cluster is defined as a concentration of companies and industries in a geographic region, which are interconnected by the markets they serve, and the products they produce, as well as the suppliers, trade associations and educational institutions. Famous clusters include: Silicon Valley for microelectronics and venture capital markets; Route 128 in Massachusetts for software; and Hartford for its insurance and finance sectors.

QD1. Would your business be classified in any one of the following clusters? (Read choices 1-11)
Agriculture
Tourism
Bioscience
Aerospace Component Manufacturing
Software/Information Technology
Metal Manufacturing
Maritime
Plastics

Health
Financial
None of these

QD2. What would you classify your business as?
Real estate
Architectural
Service
Printing
Distributor/wholesale
General manufacturing
Economic/community development
Housing
Government
Educational institution
Non-profit organization
Other

QD3. About how much do you expect your gross revenue to be for the current calendar year?
Under $100,000
$100,000 up to $500,000
$500,000 up to $1 million
$1 million up to $10 million
$10 million up to $20 million
$20 million or more

QD4. Approximately how many employees does your company have?
1-4
5-9
10-19
20-49
50-99
100-249
250-999
1000 or more

8.3.3 Tenant Survey

Methodology – DECD staff from the Research and Planning branch of the Compliance Office and Planning/Program Support conducted a survey of airport tenants. Results catalog almost three hundred business' response on basic operations and spending related to the airport. The pool of businesses surveyed is a list of tenants tracked by the Department of Transportation. The survey collected information related to the lease relationship between the business and Bradley, the percent of sales related to the airport, and the number of people employed.

Purpose – The survey was designed to collect data from businesses that provide services directly related to air transportation services at Bradley. The results of the survey will form the quantitative data needed to conduct the direct impacts for the RIMS II analysis, and will provide supplemental data for the counterfactual analysis using the TranSight/Airports model.

Survey Questions

INT. I'm calling from the Connecticut Department of Economic and Community Development. We're conducting a survey for the Department of Transportation regarding the Economic Impact of Bradley International Airport in the region.

Our records indicate that the name of your business is _____. Is that correct?
ASK AS OPEN ENDED

Q1. Does your company rent or lease property from Bradley Airport?

Q2. Approximately how many people are employed at _____?
ASK AS OPEN ENDED

Q2b. What percent of those employees have jobs directly related to Bradley Airport?
ASK AS OPEN ENDED

Q3. Approximately how much of your annual sales are directly related to Bradley Airport?
ASK OPEN ENDED

Survey Summary

Between BDL and	Both Directions Combined O&D Passengers			Passengers Originating at BDL
	O&D Passengers	Average Coupons	Average Itinerary Distance (Miles)	
CA Northern[1]	206,170	2.00	2,705	114,900
CA Southern[1]	340,890	1.99	2,586	201,980
FL Northern[2]	581,040	1.36	1,094	454,220
FL Southern[2]	941,540	1.41	1,226	672,690
Illinois	367,270	1.12	797	206,210
Mid Atlantic	735,430	1.26	414	396,610
Midwest	334,390	1.70	804	186,640
Missouri	122,800	1.55	1,075	67,550
New England	94,160	1.33	1,083	50,250
New York/New Jersey (excl. NYC/EWR)	52,000	1.13	283	29,020
NYC/Newark	9,870	1.01	116	4,070
Ohio	191,410	1.54	624	99,920
Pennsylvania	118,330	1.12	324	58,090
Southeast	421,690	1.66	1,023	264,050
Southwest	549,270	1.88	2,207	397,190
Texas	295,030	1.76	1,613	164,660
WA/Pacific	122,460	2.22	3,476	79,950
Connecticut	na	na	na	na
Western Massachusetts	na	na	na	na
Rest of US	244,730	1.97	1,577	130,800
Total 50 States	5,728,480	1.56	1,298	3,578,800

1/ CA divided at Bakersfield (BFL) which was assigned to CA Southern

2/ FL divided at Orlando+Tampa with Orlando+Melbourne assigned to FL Northern and Tampa assigned to FL Southern.

Note: DPIJ (domestic portion of international journeys) passengers are excluded.

Source: U.S. DOT, Origin-Destination Passenger Survey, CY 2003, via Data Base Products, Inc.

CA Northern		Both Directions Combined O&D Passengers			
Rank	Between BDL and	O&D Passengers	Average Coupons	Average Itinerary Distance (Miles)	Passengers Originating at BDL
1	SFO	71,700	2.05	2,708	45,900
2	OAK	48,640	1.93	2,738	25,120
3	SJC	46,250	1.91	2,676	25,480
4	SMF	33,170	2.01	2,676	15,180
5	FAT	3,970	2.32	2,756	2,090
6	MRY	1,350	2.75	2,779	710
7	ACV	650	3.09	2,902	300
8	RDD	180	3.00	2,875	50
9	MOD	100	3.00	2,753	30
10	CIC	100	3.00	2,814	20
11	CEC	60	3.17	2,909	20
Grand Total/Average		206,170	2.00	2,705	114,900

CA Southern		Both Directions Combined O&D Passengers			
Rank	Between BDL and	O&D Passengers	Average Coupons	Average Itinerary Distance (Miles)	Passengers Originating at BDL
1	LAX	154,040	2.02	2,596	89,500
2	SAN	95,840	1.93	2,561	62,070
3	SNA	38,050	1.99	2,571	22,360
4	ONT	25,790	1.85	2,586	13,180
5	BUR	9,670	2.06	2,655	4,390
6	PSP	7,210	2.11	2,532	5,630
7	SBA	4,130	2.58	2,692	1,960
8	LGB	3,120	2.05	2,656	1,660
9	SBP	1,410	2.90	2,757	590
10	BFL	770	2.38	2,655	340
11	SMX	260	3.00	2,687	130
12	OXR	220	3.14	2,622	80
13	CLD	210	2.81	2,587	40
14	IYK	100	3.00	2,668	20
15	SCK	50	2.20	2,817	30
16	IPL	20	2.50	2,634	-
Grand Total/Average		340,890	1.99	2,586	201,980

FL Northern		Both Directions Combined O&D Passengers			
Rank	Between BDL and	O&D Passengers	Average Coupons	Average Itinerary Distance (Miles)	Passengers Originating at BDL
1	MCO	483,960	1.23	1,089	392,630
2	JAX	54,050	1.96	1,080	34,500
3	DAB	13,180	2.02	1,239	8,950
4	VPS	8,530	2.07	1,155	5,610
5	TLH	7,380	2.05	1,100	3,900
6	PNS	6,260	2.03	1,156	3,730
7	PFN	4,220	2.05	1,137	2,960
8	GNV	3,460	2.01	1,126	1,940
Grand Total/Average		581,040	1.36	1,094	454,220

FL Southern		Both Directions Combined O&D Passengers			
Rank	Between BDL and	O&D Passengers	Average Coupons	Average Itinerary Distance (Miles)	Passengers Originating at BDL
1	FLL	281,270	1.28	1,233	202,220
2	TPA	263,350	1.25	1,150	178,900
3	PBI	190,080	1.29	1,193	130,360
4	RSW	111,910	1.98	1,367	86,050
5	MIA	55,620	1.55	1,314	45,300
6	SRQ	20,380	2.02	1,289	14,520
7	EYW	11,570	2.20	1,373	10,210
8	MLB	7,200	2.01	1,311	4,990
9	APF	140	2.86	1,261	120
10	PIE	20	3.00	1,599	20
Grand Total/Average		941,540	1.41	1,226	672,690

Illinois		Both Directions Combined O&D Passengers			
Rank	Between BDL and	O&D Passengers	Average Coupons	Average Itinerary Distance (Miles)	Passengers Originating at BDL
1	ORD	265,570	1.08	791	151,630
2	MDW	86,980	1.11	786	47,760
3	MLI	4,970	2.02	1,007	2,200
4	PIA	2,970	2.03	1,016	1,460
5	CMI	2,560	2.01	929	970
6	BMI	2,280	2.00	939	1,130
7	SPI	1,670	2.01	998	960
8	UIN	130	2.00	1,051	50
9	DEC	110	2.09	1,073	50
10	MWA	30	2.00	1,057	-
Grand Total/Average		367,270	1.12	797	206,210

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| Mid Atlantic | | Both Directions Combined O&D Passengers | | | |
Rank	Between BDL and	O&D Passengers	Average Coupons	Average Itinerary Distance (Miles)	Passengers Originating at BDL
1	BWI	317,510	1.03	284	163,280
2	RDU	96,460	1.55	558	52,000
3	DCA	83,630	1.04	315	50,020
4	CLT	71,460	1.31	699	43,160
5	IAD	60,100	1.01	326	30,240
6	ORF	35,570	1.89	433	21,170
7	GSO	20,770	2.00	807	9,410
8	RIC	13,380	1.97	424	6,680
9	ILM	8,230	2.02	853	5,760
10	AVL	6,030	2.00	844	3,400
11	ROA	4,630	2.01	698	2,470
12	PHF	4,350	2.00	407	2,160
13	FAY	3,030	2.03	887	1,620
14	EWN	2,520	2.02	865	1,650
15	CHO	2,320	2.00	489	1,000
16	OAJ	1,840	2.07	835	1,130
17	LYH	1,110	2.01	810	370
18	SBY	1,000	2.00	311	500
19	PGV	880	2.09	846	490
20	HGR	470	2.00	549	60
Subtotal/Average		735,290	1.26	414	396,570
Other Total/Average		140	2.00	576	40
Grand Total/Average		735,430	1.26	414	396,610

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Rank	Midwest Between BDL and	O&D Passengers	Average Coupons	Average Itinerary Distance (Miles)	Passengers Originating at BDL
1	DTW	76,890	1.23	630	41,820
2	BNA	73,030	1.44	894	41,600
3	IND	50,850	1.97	801	28,500
4	SDF	25,850	2.00	806	13,930
5	MEM	18,080	1.99	1,162	10,980
6	TYS	16,810	2.00	916	9,870
7	GRR	11,670	2.00	754	6,590
8	SBN	8,350	2.01	776	4,460
9	LEX	8,140	2.00	805	4,100
10	CHA	6,590	2.02	952	3,440
11	FWA	5,890	2.01	752	3,000
12	AZO	4,720	2.00	742	2,610
13	LAN	4,000	1.98	687	2,300
14	CRW	3,990	2.01	622	2,110
15	EVV	3,490	2.03	912	2,070
16	TRI	3,050	2.03	831	1,800
17	MBS	2,950	2.00	677	1,450
18	TVC	2,880	2.00	824	1,800
19	FNT	1,660	2.00	655	720
20	MKG	650	2.00	739	330
Subtotal/Average		329,540	1.69	803	183,480
Other Total/Average		4,850	2.07	843	3,160
Grand Total/Average		334,390	1.70	804	186,640

Missouri		Both Directions Combined O&D Passengers			
Rank	Between BDL and	O&D Passengers	Average Coupons	Average Itinerary Distance (Miles)	Passengers Originating at BDL
1	STL	76,740	1.30	985	42,670
2	MCI	40,210	1.94	1,226	21,240
3	SGF	4,900	2.07	1,229	3,090
4	COU	370	2.05	1,061	190
5	JLN	300	2.00	1,208	160
6	TBN	200	2.05	1,080	180
7	CGI	60	2.33	1,099	20
8	IRK	20	2.00	1,105	-
Grand Total/Average		122,800	1.55	1,075	67,550

New England	Both Directions Combined O&D Passengers			
	O&D	Average	Average Itinerary	Passengers
Between BDL and	Passengers	Coupons	Distance (Miles)	Originating at BDL
MSP	89,400	1.29	1,083	47,760
RST	1,870	2.04	1,100	1,070
DLH	1,510	2.11	1,200	720
INL	240	2.17	1,309	180
STC	230	2.00	1,110	90
BJI	220	2.05	1,250	140
BRD	220	2.09	1,165	110
BTV	140	2.00	368	70
BOS	100	1.20	168	30
HIB	70	2.00	1,224	20
MHT	50	1.40	137	20
GPZ	50	2.20	1,216	30
PVD	50	1.00	66	-
ACK	10	2.00	333	10
	94,160	1.33	1,083	50,250

New York/New Jersey (excl. NYC/EWR)		Both Directions Combined O&D Passengers			
Rank	Between BDL and	O&D Passengers	Average Coupons	Average Itinerary Distance (Miles)	Passengers Originating at BDL
1	BUF	29,140	1.12	338	16,240
2	ROC	9,990	1.20	290	5,690
3	ALB	6,300	1.00	80	3,240
4	SYR	5,570	1.02	194	3,370
5	BGM	360	2.00	361	140
6	ITH	200	2.00	388	100
7	ELM	190	2.00	376	90
8	JHW	150	2.00	531	60
9	ACY	90	2.00	242	90
10	HPN	10	2.00	150	-
Grand Total/Average		52,000	1.13	283	29,020

NYC/Newark		Both Directions Combined O&D Passengers			
Rank	Between BDL and	O&D Passengers	Average Coupons	Average Itinerary Distance (Miles)	Passengers Originating at BDL
1	EWR	9,110	1.01	116	3,710
2	JFK	670	1.01	108	310
3	LGA	90	1.67	228	50
Grand Total/Average		9,870	1.01	116	4,070

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Ohio		Both Directions Combined O&D Passengers			
Rank	Between BDL and	O&D Passengers	Average Coupons	Average Itinerary Distance (Miles)	Passengers Originating at BDL
1	CMH	64,410	1.74	645	33,160
2	CLE	59,490	1.43	537	31,180
3	CVG	45,400	1.17	689	24,770
4	DAY	11,370	2.00	713	5,070
5	CAK	7,900	2.01	583	3,960
6	TOL	2,840	2.02	711	1,780
Grand Total/Average		191,410	1.54	624	99,920

Pennsylvania		Both Directions Combined O&D Passengers			
Rank	Between BDL and	O&D Passengers	Average Coupons	Average Itinerary Distance (Miles)	Passengers Originating at BDL
1	PIT	59,700	1.11	423	31,340
2	PHL	50,610	1.01	196	22,600
3	MDT	3,950	1.97	307	2,370
4	ERI	1,730	2.00	590	820
5	SCE	650	2.00	422	270
6	ABE	530	2.02	260	220
7	AVP	340	2.06	306	100
8	LBE	220	2.00	453	80
9	JST	180	2.00	481	80
10	IPT	130	2.00	406	70
11	AOO	100	2.00	508	20
12	RDG	60	2.00	248	20
13	FKL	50	2.00	470	30
14	BFD	50	2.00	529	50
15	DUJ	30	2.00	490	20
Grand Total/Average		118,330	1.12	324	58,090

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Southeast		Both Directions Combined O&D Passengers			
Rank	Between BDL and	O&D Passengers	Average Coupons	Average Itinerary Distance (Miles)	Passengers Originating at BDL
1	ATL	180,570	1.23	899	101,720
2	MSY	73,000	1.90	1,372	56,390
3	SAV	27,610	2.01	984	20,440
4	BHM	23,210	1.96	1,020	13,140
5	CHS	19,840	2.01	888	14,370
6	GSP	14,740	2.01	861	7,620
7	MYR	12,190	2.01	885	10,200
8	CAE	11,890	2.00	830	6,820
9	HSV	10,950	2.02	992	5,640
10	JAN	6,390	2.03	1,236	3,190
11	MGM	4,820	2.04	1,018	3,000
12	BTR	4,660	2.08	1,417	2,370
13	HHH	4,450	2.04	852	3,800
14	GPT	4,080	2.07	1,250	2,640
15	SHV	3,800	2.11	1,475	1,890
16	MOB	3,490	2.07	1,199	2,310
17	AGS	2,850	2.05	919	1,560
18	LFT	2,560	2.25	1,496	1,290
19	CSG	1,990	2.04	955	1,200
20	MLU	1,140	2.12	1,324	520
Subtotal/Average		414,230	1.65	1,021	260,110
Other Total/Average		7,460	2.12	1,109	3,940
Grand Total/Average		421,690	1.66	1,023	264,050

| Southwest | | Both Directions Combined O&D Passengers | | | |
| | | O&D | Average | Average Itinerary | Passengers Originating at |
Rank	Between BDL and	Passengers	Coupons	Distance (Miles)	BDL
1	LAS	183,910	1.85	2,383	166,920
2	PHX	145,270	1.64	2,258	94,790
3	DEN	87,200	2.00	1,771	49,360
4	ABQ	34,950	2.05	1,997	22,130
5	SLC	34,120	2.02	2,244	22,780
6	TUS	20,710	2.02	2,297	12,530
7	RNO	18,860	2.16	2,621	13,220
8	COS	11,280	2.02	1,854	6,160
9	EGE	2,390	2.21	1,909	2,210
10	ASE	2,160	2.72	1,843	1,770
11	GJT	2,080	2.54	2,410	1,120
12	HDN	1,520	2.25	1,876	1,300
13	DRO	1,260	2.21	2,452	630
14	MTJ	940	2.84	1,990	600
15	FLG	780	2.13	2,333	530
16	YUM	540	2.24	2,430	230
17	GUC	310	2.94	1,917	210
18	SGU	190	3.00	2,539	140
19	TEX	170	2.35	2,362	160
20	PRC	150	2.20	2,301	40
Subtotal/Average		548,790	1.88	2,207	396,830
Other Total/Average		480	2.77	2,165	360
Grand Total/Average		549,270	1.88	2,207	397,190

Texas Rank	Between BDL and	O&D Passengers	Average Coupons	Average Itinerary Distance (Miles)	Passengers Originating at BDL
1	DFW	107,230	1.44	1,514	59,350
2	IAH	54,150	1.83	1,590	29,210
3	SAT	41,420	1.98	1,740	27,460
4	AUS	38,720	1.97	1,680	19,510
5	HOU	29,420	1.81	1,549	15,830
6	ELP	7,150	2.16	2,106	4,240
7	CRP	2,840	2.13	1,776	1,950
8	LBB	1,580	2.35	1,825	700
9	ILE	1,580	2.09	1,621	700
10	MFE	1,540	2.24	1,906	920
11	AMA	1,240	2.19	1,834	650
12	ACT	1,110	2.02	1,569	480
13	DAL	1,050	2.19	1,759	570
14	LRD	920	2.14	1,881	720
15	HRL	720	2.51	1,821	540
16	MAF	660	2.30	1,856	310
17	TYR	630	2.14	1,598	190
18	ABI	530	2.13	1,654	310
19	BRO	490	2.73	1,866	290
20	CLL	490	2.45	1,625	290
Subtotal/Average		293,470	1.75	1,613	164,220
Other Total/Average		1,560	2.24	1,619	440
Grand Total/Average		295,030	1.76	1,613	164,660

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WA/Pacific		Both Directions Combined O&D Passengers			
Rank	Between BDL and	O&D Passengers	Average Coupons	Average Itinerary Distance (Miles)	Passengers Originating at BDL
1	SEA	66,920	2.03	2,601	37,280
2	HNL	25,690	2.44	5,132	20,590
3	OGG	8,680	2.44	5,106	7,900
4	ANC	7,570	2.18	3,744	5,060
5	GEG	5,690	2.14	2,352	3,070
6	KOA	2,220	3.08	5,094	2,030
7	LIH	1,800	3.15	5,184	1,690
8	FAI	1,350	2.63	3,716	880
9	PSC	950	3.03	2,736	420
10	JNU	360	3.14	3,410	280
11	ADQ	200	3.05	3,853	140
12	ITO	180	3.17	5,286	150
13	YKM	150	3.00	2,562	30
14	EAT	140	3.00	2,570	40
15	KTN	130	3.00	3,278	110
16	ALW	100	3.00	2,690	20
17	BLI	80	3.00	2,584	60
18	SIT	70	4.00	3,735	40
19	BET	40	3.00	3,958	20
20	CLM	40	3.00	2,534	40
Subtotal/Average		122,360	2.22	3,476	79,850
Other Total/Average		100	3.60	4,154	100
Grand Total/Average		122,460	2.22	3,476	79,950

Rest of US Rank	Between BDL and	O&D Passengers	Average Coupons	Average Itinerary Distance (Miles)	Passengers Originating at BDL
1	PDX	46,700	2.02	2,645	23,850
2	MKE	35,100	1.33	806	16,420
3	OMA	18,560	1.96	1,246	8,860
4	OKC	17,920	2.00	1,495	9,660
5	LIT	12,130	2.03	1,285	6,420
6	TUL	11,850	2.03	1,406	6,190
7	MSN	10,860	1.99	890	5,620
8	DSM	10,080	1.99	1,126	6,210
9	CID	5,940	2.03	1,042	3,060
10	BOI	5,360	2.16	2,289	2,910
11	BZN	5,170	2.19	2,005	3,840
12	XNA	4,930	2.04	1,366	2,770
13	GRB	4,740	2.02	918	2,710
14	ATW	4,650	2.01	925	2,460
15	ICT	4,400	2.05	1,435	2,440
16	JAC	3,800	2.37	2,080	3,350
17	LNK	3,700	2.02	1,301	2,080
18	FSD	3,170	2.06	1,269	1,810
19	BIL	3,160	2.30	1,994	2,080
20	MSO	3,130	2.28	2,182	1,660
Subtotal/Average		215,350	1.92	1,557	114,400
Other Total/Average		29,380	2.33	1,718	16,400
Grand Total/Average		244,730	1.97	1,577	130,800

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